Virginia Medical Monthly

Official Publication of the Medical Society of Virginia

Vol. 70, No. 5
WHOLE No. 1091. RICHMOND, VA., MAY, 1943. $2.00 A YEAR
25 CENTS A COPY

Guest Editorial

Washington Conference on Eclampsia

HYPERTENSION and albuminuria in pregnancy constitute pathological states of broad interest to the clinician and research worker alike. A public health program of vast proportions exists as a result of these phenomena. To the public health officer, general practitioner, the obstetrician, the internist, the endocrinologist, the physiologist, the pathologist, the metabolism expert, and even on occasion to the surgeon who often justly prides himself on his ignorance of obstetrics but still at times cuts out a baby in an emergency, hypertension and albuminuria in pregnancy still present a pretty much unanswered challenge.

In Washington, D. C. in January 1941 a meeting was held under the auspices of The United States Department of Labor, Maternal and Child Health Division, Children's Bureau, called "Conference on Eclampsia". It was unfortunate, but obviously necessary, that attendance was limited. Many men, outstanding contributors, were not invited. It is understood that in future meetings, when the war permits resumption, all such individuals will be asked to appear. A representative group, however, was present and the attempt was made to determine from these men what we know and do not know about the subject. For two days in long morning and afternoon sessions representatives of clinical and scientific medicine spoke their minds and at times hotly discussed as many problems concerning hypertension and albuminuria and edema in pregnancy as time permitted. The proceedings were published in mimeograph form for limited distribution. It is unfortunate that these could not have had wider circulation.

For some years before the Conference it had seemed that a cooperative effort to study this subject was indicated since it is a major cause of maternal and fetal mortality. To make such a cooperative effort possible it was necessary for component clinics of this effort to talk a common language. Hence an American Committee under the Chairmanship of Dr. Mussey was appointed to formulate a universally acceptable—if tentative—classification. The classification of the American Committee permits accepting clinics to study cases in common groups. By forwarding data so obtained to a collecting agency it seems probable that within a reasonable time factual conclusions in these groups as to pathology, prognosis, treatment, and other at present unknowns can be drawn in more convincing fashion than is possible by individual men or clinics.

A plan to improve an unsatisfactory situation must be judged by its accomplishment not by its ideology. By this standard it must be said that we have a long way to go. We have established a relatively common language for hypertension and albu-

XUM

minuria in pregnancy but we have made no provision for the collection of data, with intelligent analysis, and the dissemination of facts so culled.

In the words of Dr. Daily at the Washington Conference, "There are two things we hope to accomplish in this meeting. First to record a thorough discussion of the known facts concerning the late toxemias of pregnancy and, second, to consider suggestions concerning future research in this field that might be carried on in various clinics throughout the country."

Lest we appear to raise a problem only to attack it, we set down for consideration certain outstanding matters of discussion and of disagreement at the Washington Conference.

It is true that differences of opinion were expressed in at least half of the subjects discussed. Not all of these can be noted here.

It was hotly debated whether or not eclampsia is a disease peculiar to pregnancy or a manifestation of "acute hypertension", so to speak, because of its occurrence in the pregnant state. As an obvious corollary the cause of eclampsia was not agreed upon. The allied question of the applicability and usefulness of the American Committee classification, or any other for that matter, was answered in the affirmative by some and in the negative by others. A similar difference of opinion was expressed as to the time, if this classification is used, for diagnostic indexing of each case, whether on discharge from the hospital or after three, six, or twelve months follow-up, or even longer.

While the importance of edema in the eclamptic state was generally accepted, and the effect of sodium in its production largely agreed upon, the method of its production, its relation to fluids in the absence of sodium, the place of hypoproteinemia and capillary permeability as well as other factors were subjects for discussion. Opinions differed as to its importance as a cause of the convulsions in eclampsia.

The behavior of the heart and its relationship to pulmonary edema in eclampsia and the use of digitalis gave rise to the expression of marked differences of opinion.

This question was raised and not settled. In post toxemic pregnancy is the hypertension the result of the toxemia or the toxemia the result of the hypertension? There was discussion and some disagreement as to the differential diagnosis between mild hypertensive disease and mild preeclampsia. The importance of pyelitis and pyelonephritis in relation to the eclamptic state was not agreed upon. There was no concensus of opinion with regard to the place of placental pathology in hypertensive albuminuric pregnancy—either in effect on "toxemic" still births or in relation to hormonological concepts of these diseases. No one knew convincingly the diagnosis or best treatment of pregnancies complicated by marked albuminuria with little or no hypertension. There was expressed difference of opinion regarding nephrosis in pregnancy. There was complete lack of agreement as to the importance of low metabolic rates in relation to the production of the toxemias of pregnancy, as well as to the value of blood cholesterol estimations, and the value of thyroid feeding as a prophylactic agent. No one could say what percentage of acute glomerular nephritis is followed by chronic glomerular nephritis. There was lack of agreement as to the specificity of pathological changes especially in the liver.

Mortalities cited in the same disease, namely, eclampsia, ranged from 2 to 25 per cent. No single method of medical treatment was agreed upon. Morphine had advocates; others were definitely opposed to its use. The use of magnesium sulphate by mouth raised debate; its use by vein or muscle with or without morphine and/or the

XUM

barbiturates and/or paraldehyde provoked discussion as to dosage, method of administration and its dangers. Refined veratrum viride was mentioned and largely condemned, yet its pharmacological action as a vasodilator and results in Cincinnati by its use certainly entitles it to consideration.

Although it was the general opinion that hysterotomy has no place in the obstetrical treatment of eclampsia, there was a definite difference of viewpoint as to its merits in fulminating preeclampsia and in primiparous preeclampsia demanding delivery. No definite statistics as to its relative merits as opposed to induction from below by rupture of the membranes or bagging in these conditions could be presented. Anesthesia, local or otherwise, in the delivery of "toxemic" patients both from above and below was a subject for debate.

We have recorded only the major items on which disagreement was marked. Since, however, these are fundamentals, it would seem that better results might be obtained in this group which contributes so largely to the maternal and fetal mortality of this country if some reconciliation of ideas could be attained through cooperative statistical study. It may be argued with some justice, if we judge by a slow and steady improvement in mortalities, that the ordinary process of evolution is accomplishing this reconciliation of ideas. That this process is unduly slow is proved by the listing above. Meanwhile many lives are lost each year. Therefore, we conclude that within the limitations imposed by the war, the sooner a practical mechanism is set up for this purpose the better.

We believe that the only suitably equipped agency for the collection of this data is the Children's Bureau in Washington. It has been pointed out that the mere collection of data in one place is not enough to give desired results. Analysis of this data by competent individuals is said to be an absolute requisite. With this we agree. We believe also that a small number of completely worked up cases from many clinics is essential rather than greater amounts of material less carefully studied. For analysis and coordination and for conclusions drawn, a small committee of representative interests in the field would serve. This plan, as has been demonstrated, worked well in the American Committee for Classification.

Such a committee, working with the Children's Bureau as a collection agency with its statistical experience, would in five years of actual activity go far to smooth out our differences and establish facts for etiology, prognosis and therapy in this major cause of obstetrical mortality and morbidity.

FOSTER S. KELLOGG, M.D.

EDITOR'S NOTE. Dr. Kellogg is clinical professor of obstetrics at Harvard Medical School. For years he has been interested in eclampsia and is an authority on the classification of toxemias of pregnancy.

Floral Eponym (3)

THE *Spring Beauty*, Clatonia, is named for John Clayton (c. 1685-1773) of Virginia, the botanist. There is some doubt as to whether John Clayton practiced or even studied medicine. His brother Thomas graduated in medicine at Cambridge and it is argued that it was unusual for two brothers in Colonial Virginia to study medicine. On the other hand in the third edition of his *Flora Virginica* the title M.D. is added to his name. Toner, Thacker, and Thomas Jefferson also speak of him as a doctor of medicine. He wrote extensively upon medicine, chemistry, and botany, but that means little, for many with no medical training wrote upon and even practiced medicine in those days.

XUM

EMOTION AND ITS HOME FRONT REACTION*

BEVERLEY R. TUCKER, M.D.,
Physician in Chief to the Tucker Hospital,
Richmond, Virginia.

A state of fear is the emotion that could upset the home front. When we consider the problem of fear the following questions arise, more or less in order:—

1. What is fear?
2. What do we fear?
3. What are fear reactions?
4. Why do we develop disturbing fears?
5. What should we do about these fears?

Although there is of necessity some overlapping, let us briefly discuss these questions.

What is fear? Webster's Dictionary wisely says, "Fear is a most general term" and then goes on to state, among other things, that fear is a painful emotion connoting alarm, dread, disquiet, anxiety, concern, dismay, disconcertion, apprehension, consternation, terror, and panic. I might add that the obsession by some particular fear constitutes a phobia. But, in my opinion, these definitions, although factual, do not delve deeply enough, and we shall have to consider a state of fear as either a transient or an older and at times a constitutional reaction of the hypothalamus whose sympathetic and parasympathetic connections carry the feeling-tones of stimuli created exogenously or endogenously by imagination or suggestion or by anticipated or actual event. Anticipation is frequently the worst part of pain and the best part of pleasure. The real coward is not the person who is full of fears, for he is ill, but the normal individual who deliberately decides not to risk his hide, his possessions, or his position for what is desirable, patriotic, or right.

Fear properly appreciated and controlled is defensive and beneficial as fear to do evil, fear of avoidable risks, fear of disastrous consequences, and the reasonable fear of disease or of injury to self or to others. The daredevil is not necessarily brave, but often only ill-balanced and reckless. It seems needless, however, to remind this audience that unwarranted or even warranted fear not controlled, directed, and balanced by reason may lead to irregularity of behavior, physical or mental illness, or possibly to death either unconsciously induced, for instance, in certain cases of self-starvation, or by conscious suicide. Three hundred and fifty years ago Sir Philip Sidney, in his poem, "Arcadia," wrote:

> "Fear is more pain than is the thing it fears,
> Disarming human minds of native might,
> While each concern an ugly feature bears
> Which were not evil, well weighed in Reason's light."

In discussing *what do we fear,* possibly the answer is more simple in spite of numerous embracements. We more commonly fear injury, disease or death, or so-called acts of God, wrath of God, punishment, disgrace, insecurity, and a hundred other things which may lead toward real or supposed disaster or calamity. These fears are frequently associated with vanity in the individual and an undue idea of personal importance in that he may feel that he is picked out by man or God to be especially imposed upon. It is said that the newborn is void of fear, but this must be because of immature development of the hypothalamus and of the fronto-psychic centers, for defensive fears are instinctive, at least in the opinion of many of us. As we grow, tribal taboos, conventions, laws, religious dogma, unexplained happenings, discomforts, and, also, the concepts, the examples, and the suggestions of others instigate, teach, or compel fear in the individual. One may even fear not to fear.

The *reactions of fear* may be the elaborations of, or the estimated consequences of, the ordinary things we fear and may involve or lead to such conditions as phobias, rituals, supplications, and persecutory ideas; or to a desire for escape, as shown in alcoholism, drug taking, and sex irregularities; or, consciously or unconsciously, to assumed illness, amnesia, scourging or mutilations, bizarre or actual suicide. Fear reactions are due to the overtone sensitivity of the hypothalamus and its connections which carry efferent and afferent impulses, spoken of as feeling-tones, to and from the various systems, organs, and tissues of the body and producing not only mental and emotional, but also somatic complaints which may or may not lead to organic conditions. On the other hand, organic lesions may,

*Read at the meeting of the Neuropsychiatric Society of Virginia, February 16, 1943, at Richmond.

through feeling-tones going to the hypothalamus, inaugurate emotional fear states.

Through psychic—thalamic—hypothalamic connections we may have mood swings, possibly even to the extent of manic depressive psychosis or anxiety states or obsessive or persecutory states; through the vagus connections, vagotonia; through the voluntary motor system, restlessness, habit spasm or retarded movements; through the involuntary motor system, diarrhea or constipation, hypertension or lowered blood pressure; through the endocrine system, over or under secretion of the ductless glands; through genital connections, disturbance of the generative organs and of sex activities; through various mechanisms, change in body fluid, body chemistry, and body rhythms. These are only some of the reactions which are evolved from the emotion of fear.

Some of the immediate reactions of fear may be involuntary vomiting, urination, defecation, screaming, dumbness, transient blindness, flight, immobility or death simulation. These manifestations may disappear quickly or be prolonged, for instance, into frequent vomiting or urination, chronic diarrhea, prolonged disturbance of speech and vision, a sense of weakness, or long periods of unreality.

Fear reactions are at times even of more amazing complexity and may account for ogocentria or for the clowning fool, the hero or the hermit, the egotist or the obsequious, the malingerer or the frustrate, the hypocrite or the obvious sinner, the foreflusher, or the mealy-mouthed, the mendicant or the murderer.

One of the reasons *why we develop fear* through an inherited or an acquired hypersensitivity of the hypothalamic apparatus is a lack of the even development of our powers of perception, conception, reason, will, and judgment. The hypothalamus, the most ancient part of the brain, may be affected from a morphological, physio-chemical, pathological, or a purely functional standpoint. Thus improper development, body chemistry changes, injury or disease, or psychogenic trauma or even excitement may affect its manifestations. The hypothalamus consists of various accumulations of cells—motor-like cells, neuro-secretory cells, cells of special function as for temperature, water balance, pulse rate, menstrual rhythm, blood pressure stability, and for the emotional status; and the greatest of these hypothalamic functions is the emotions.

If the emotions are upset, the other functions of this area are upset. Emotions are more likely to be disturbed in those who have been over-protected, in the only child, in those who have been accustomed to comforts and conveniences, and in those who have been indulged, undisciplined, and untrained in emotional control.

Emotions may be individual or *en masse*. Fear is one of the most common of the emotions and probably the most powerful except that of love—love of the opposite sex, love of the family, love of home, love of country, love of mankind, love of God. Both fear and love are contagious, but fear is more immediately contagious than love.

Fear on the home front is more common than fear in the armed forces. There are many obvious reasons for this; for instance, lack of discipline, lack of camaraderie, lack of organized purpose. But there are other more or less subtle reasons for civilian fear in war time, such as absence of immediate danger of attack by the enemy or lack of the thrill of an impending attack on the enemy—either of which when present will pour out adrenalin, strengthen the self-preservation defensive mechanisms and shunt fears aside in favor of the aggressive instinct. In the neuropsychiatric clinic at St. Thomas' Hospital, in London, there were far fewer emotionally disturbed psychoneurotic patients during the bombing period than before. Many examples of this could be given. "They also serve who only stand and wait", but their service is more "jittery," if I may be excused the expression.

It is the uninformed, the expectant, the insecure, the propagandized, the misled individual or group that gives away to emotional fears, or to neuropsychoses on the home front. Tell them the truth, as far as is militarily possible, about what has happened or what is happening or what is likely to happen. Organize them purposefully and let them know as accurately as can be estimated what sacrifices will be required, give them unsensationalized information, teach them solemn, solid respect for country and cause regardless of politics or aggrandizement and cut out "hooplolly" propaganda. Churchill's blood, sweat, and tears speech is an excellent example. Tell the truth, and the number of those emotionally, nervously, and mentally disturbed will materially lessen. "Truth crushed to earth shall rise again", but why crush it to earth merely to witness its resurrection.

XUM

I am not one who thinks the regular forms of insanity are increasing, but I do know that on the home front in this country there is an unnecessary increase of those disturbed by the emotion of fear and its reactions which lead not often to insanity but frequently to the disruption of the war effort.

How should we treat those who have developed fear states? Assuredly not by barbitals, bromides, and opiates unless at times in transient and small quantities. Psychoanalysis is not applicable or effective in these cases because of the time element and because in many of them early psychgenic trauma cannot be elicited. However, a careful investigation of the patient's difficulties and situation is necessary and it is important to establish rapport with the patient in order that explanation of emotional control, re-education, and sane advice may be given. Dr. Weir Mitchell used to say that the best medicine is often not given in a teaspoon or in a pill but is in sound advice.

The proper regulation of rest, sleep, diversion, exercise, and food is necessary. Excesses of alcohol, tobacco, coffee, and other injurious habits should be interdicted. Vitamin deficiencies, anemia, and physical disturbances should be corrected.

Several years ago we studied 18 cases at the Tucker Hospital that had emotional illness and to whom we had given belladonna root extract (rabellon) in doses of from one-half to three-fourths of a tablet three times daily for fifteen days or more. Then Dr. Harry Brick and I checked the results and found 12 of the 18 cases either very greatly improved or recovered, 5 cases showed moderate improvement, and 1 case did not improve.

Of these 18 patients, 13 were females and 5 were males. Their ages varied from 24 to 72, the average being 45. Fears or phobias, anxieties, and somatic complaints occurred in all cases. Weeping, irritability, or temper spells were present in 14 cases. Low mood swings without the history of past deep depressions or manic periods were present in 14 cases. Low blood pressure appeared in 11 cases and excessive blood pressure in only one. Other frequent symptoms were admitted suicidal ideas, disturbance of libido, fatigability, persecutory ideas, resentments, vagotonic manifestations, insomnia, and difficulty in concentration except in matters concerning self. Frequent laboratory findings were lowered blood calcium and blood sugar and moderate secondary anemia. May not these symptoms and manifestations constitute an hypothalamic fear syndrome? I think they may.

In emotional states, general massage and hydrotherapy are indicated in some cases. Insulin in doses of ten to twenty-five units half an hour before breakfast and lunch and a smaller dose before the evening meal is often helpful. When insulin is thus used some form of sweet should be served with the meal. Also, the patient should be observed for delayed reactions. Although useful in other conditions, rarely are insulin shocks, metrazol shocks, or lobectomies desirable in these particular cases. However, electric shock treatments given three times a week for from four to twelve shocks are effective in a large majority of severe cases—especially if psychotherapeutic suggestions are also given.

In *summation,* I might state that, in my opinion, emotional instability and illness is due to hypothalamic irritation, stimulation, or hypersensitiveness; that fear is the chief expression of these emotional conditions; that various somatic, endocrine, and body chemistry disturbances occur and that these, with the other manifestations mentioned, group themselves into what might be considered a syndrome.

I believe fear manifestations are on the increase in our civil population due to anticipatory apprehension rather than to actual deprivation or danger, and that they may be largely prevented by truthful knowledge of what has taken place, what is taking place, and what is likely to take place, that is, of course, as far as military expediency will permit. Reality is easier to face than uncertainty. While the rational development of patriotism is preventive and sometimes curative, propaganda is always dangerous and often harmful.

In the therapy of these hypothalamic fear states, sedatives should be avoided as much as possible; belladonna derivatives have a place, rational psychotherapy is useful, body and habit regulation is essential, and in severe cases quieting doses of insulin and especially electric shock treatments produce striking results.

The recognition and sympathetic understanding of these fear emotion states is essential—both in winning the war and in establishing satisfactory world reorganization after the war.

212 West Franklin Street.

ACUTE CIRRHOSIS OF THE LIVER*

T. DEWEY DAVIS, M.D.,
Richmond, Virginia.

The word cirrhosis, meaning yellow or tawny, was first used by Laennec to describe the atrophic liver disease which bears his name, but with long usage the term has become synonymous with sclerosis or fibrosis. There are many causes of fibrosis of the liver. Chronic biliary obstruction with or without infection will cause enlargement and increase of fibrous tissue with the primary pathology about the bile radicals. This is called hypertrophic biliary cirrhosis. The chronic cirrhosis of Hanot produces the same type of picture and is of unknown etiology. Acute and subacute yellow atrophy after recovery usually leave a small sclerotic liver. Healed liver abscess and chronic syphilis of the liver can produce cirrhosis. In the indefinite condition called Banti's disease, atrophic cirrhosis of the portal type usually develops.

In this discussion we are more interested in portal cirrhosis where it seems evident that the toxic product causing the liver disease reaches the organ through the portal veins. This poison may be chemical, bacterial, or possibly a protein decomposition fraction. Along with these there may be a qualitative or quantitative defect in the diet intake. Of the chemical poisons which have been incriminated, alcohol is clinically the most important. Connor[1] states there can be little doubt that alcohol and the habits induced by the consumption of large amounts of alcohol are the most important factors in the production of fatty liver which progresses, in at least some cases, to cirrhosis. Boyd,[2] on the other hand, says, "At present there does not appear to be sufficient evidence to justify the term alcohol cirrhosis." The cirrhosis which is occasionally seen in non-drinkers and even babies could easily be caused by some of the other factors mentioned above. In the reported series of cases of cirrhosis of the liver which have come to my attention, a history of chronic alcoholism was recorded in at least three-fourths of the cases. The fact that typical portal cirrhosis has not been reported in laboratory animals given alcohol in varying amounts does not rule out alcohol as a cause since it is difficult to reproduce the combination of conditions over a long period of time that leads to the disease in man.

It is evident that some human beings can take large quantities of alcohol daily for many years with impunity, but their histories will disclose that they also take an adequate diet. The individual who substitutes alcohol for food for days or weeks, or who repeats the performance at frequent intervals, is almost certain to damage his liver.

It is known that fatty infiltration of the liver may result from the effect of bacterial toxins, from poisons, such as chloroform or carbon tetrachloride, and spontaneously in certain cases of diabetes mellitus where there is serious interference with fatty metabolism.

The acute cirrhosis of the liver which I am discussing today should really be regarded as acute fatty liver. Connor[1] has divided his cases of portal cirrhosis into three groups: (a) Acute fatty liver which occurs in the 40 to 45 age group. In these the liver is large, usually smooth, pale in color and contains as much as 60 per cent of fat. (b) The fatty liver showing definite and progressive perilobular fibrosis. The organ in this stage may be enlarged or normal in size. This stage is most often seen in the 45 to 55 age group. And (c) the older age group where we find the liver small, nodular, and with usually a thickened capsule.

From my own experience I am convinced that continued or repeated consumption of a large amount of alcohol and a diet markedly deficient in carbohydrate and protein will lead to toxic change in the liver cells along with fatty infiltration; the resulting disturbance of liver function can in a relatively short time produce serious illness and, sometimes, death unless prompt treatment is instituted.

During the past ten years I have had the opportunity of observing five men, varying in age from 30 to 36 years, who presented the typical findings of acute fatty liver and in whose histories the combination of alcohol and dietary deficiency clearly indicated the etiology. The first of these individuals, seen in 1932, gave an alcoholic history of only two months' duration. Because of uncertainty in the diagnosis of this patient, the abdomen was ex-

*Read before the annual meeting of the Medical Society of Virginia, at Roanoke, October 5-7, 1942.

XUM

plored and a biopsy taken from the liver. The pathologist reported marked fatty infiltration of the liver, moderate cloudy swelling and degeneration of the liver cells, extensive deposits of leucocytes and early evidence of fibrosis. This patient went steadily down hill and died one month after he was first seen.

All five of the patients presented varying degrees of hepatomegaly. In two the liver extended below the right iliac crest; the livers were firm but smooth and were definitely sensitive to pressure. Jaundice, either obvious or latent, was present in all the cases; two of these had gross epistaxis which ceased promptly with the administration of parental vitamin K; four showed definite anemia and in two of these the anemia was of the macrocytic type, indicating an interference with the utilization of the X factor of Castle; one of the severe cases who recovered had marked retention of bromphthalein; mental apathy was present in all cases and one was in semi-coma when he entered the hospital. Two of the five presented clinical evidence of ascites which was not sufficient to justify removal; a third had moderate ascites on exploration of the abdomen. An interesting finding in all of my cases was definite albuminuria without other evidence of nephritis. This is a commonly reported finding in severe liver disease.

Gottardo and Winters[3] have recently emphasized the profound disturbance of protein metabolism in these cases. In their 24 cases, the total serum protein was less than normal in only three but the serum albumin was decreased in 23 of the 24 patients; the globulin fraction was elevated in 21 with a reversal of the albumin globulin ratio in 16. This is in accord with the findings of others in severe parenchymal liver diseases.

Three of my patients had low grade fever and intermittent leucocytosis during the early period of their hospital stay, indicating a definite inflammatory process in the liver. Another interesting finding was elevation of blood pressure, especially the diastolic, during the acute period with fall to normal after recovery. This seemed to parallel the albuminuria and may have been due to some pressor substance originating in the kidneys.

In none of the five cases was there evidence of severe B complex deficiency but during recovery one of the seriously ill patients complained a good deal of pain and numbness in his legs, suggestive of polyneuritis.

The treatment of these patients can be divided into immediate medical and later prevention of recurrence. The first indication is to flood the body with glucose and to buffer this with insulin. This serves two purposes, it provides the liver with an adequate supply of glucose and the alcohol in the tissues is rapidly oxidized. As soon as food can be taken by mouth, a high carbohydrate, and in the light of experiments reported by Elman and Heifitz,[4] an adequate protein diet should be ordered. This diet should be fortified by a rich source of the vitamin B complex, and if macrocytosis is present parenteral liver extract is indicated; if prothrombin lack is evidenced by bleeding, adequate parenteral vitamin K should be administered. The effect of this was most striking in one of my cases who had had severe nosebleed for ten days. Although he had a large ulcer on his nasal septum, the result of repeated cauterization, epistaxis ceased in twelve hours, and the extraction of an abscessed tooth eighteen days later was not followed by unusual hemorrhage, although his icterus index at this time was 47. I have not found under the above regime much need for sedatives and only occasionally additional alcohol. The follow-up medical treatment consists of absolute avoidance of alcohol and insistence on an adequate diet.

Under modern treatment the immediate prognosis in acute cirrhosis is good. The signs of liver failure clear and the liver gradually shrinks and in none of my four surviving cases has there developed evidence of atrophic changes. The major problem with these individuals is preventing them from relapse. I frankly tell them that further indulgence will constitute slow suicide, yet one of them was in my office September 11, 1942, with recurrence of hepatomegaly but he denied having taken more than an occasional drink. Though at the time his breath reeked with the odor of whiskey, he flatly denied having taken a drop for forty-eight hours. He, like so many opium addicts, has become a pathological liar.

One of my severe cases has remained entirely off alcohol for nearly two years and his liver function seems entirely normal but he frankly states that the only way he can stay away from alcohol is by taking a fairly large quantity of one of the barbiturates which seems to give him very much the same mental effect that he gets from alcohol. So far the drug has not seemed to harm him in any way and I have

not suggested that he discontinue it. Perhaps it may be well to provide a harmless substitute for some of them, since in my experience the results of treatment in the hands of competent psychiatrists has not been particularly encouraging.

As substitution therapy to prevent relapses in chronic alcoholism, Miller[5] has recently emphasized the value of amphetamine sulphate to overcome the let down, depressed state that drives these victims back to alcohol. Voegtlin[6] and his coworkers have published a number of articles during the past few years dealing with what they call the conditioned reflex treatment of chronic alcoholism. The basis for this treatment is the urging of alcoholic drinks on the patient immediately after he has been given a strong emetic. Excellent results have been attained in their hands but naturally any treatment of this type should not be attempted in the presence of a severely damaged liver. It might well be considered in the early stages of relapse from abstinence.

REFERENCES

1. Connor, C. L.: *Jour. A.M.A.*, 112:287, 1939.
2. Boyd, Wm.: The Pathology of Internal Diseases, Lea and Febiger, 1935.
3. Gottardo and Winters: *Amer. J. M. Sc.*, 204:205, 1942.
4. Elman, R., and Heifitz, C. J.: *J. Exp. Med.*, 73:417, 1941.
5. Miller, M. M.: *Jour. A.M.A.*, 120:271, 1942.
6. Voegtlin, W. L.: *Amer. J. M. Sc.*, 199:802, 1940.
7. Voegtlin, W. L., *et al: Jour. A.M.A.*, 120:269, 1942.

Professional Building.

DISCUSSION

DR. BLANTON PAGE SEWARD, Roanoke: We have listened, I am sure, with pleasure and profit to Dr. Davis as he described the clinical features of acute cirrhosis that occurred in his patients who had indulged excessively in alcohol, and also to his description of the pathology found in some of his patients who died. The chief point that he wished to emphasize, it seems to me, was the occurrence of acute cirrhosis at an early age, for few if any of his patients had attained their fortieth year. The pathology—fatty liver with some evidence of sclerosis—found in his cases, like that found by a few other men who have reported similar cases, was the same as the pathology that was found in older individuals who had acute hepatitis. While the disease is serious, yet all the patients, as Dr. Davis said, did not succumb to it. If we bear in mind the facts that this disease may occur in young individuals following alcoholic debauches, and that some of them unfortunately do succumb, we will not be as much puzzled concerning the cause of death which in every case cannot be attributed to congestive heart failure. On the other hand, as you know, congestive heart failure seems more often to be the cause of death of individuals who have portal cirrhosis, the chronic disease that usually occurs later in life and that is thought also to be due largely to alcohol, and the disease that usually comes to mind when cirrhosis is mentioned.

The etiology of acute hepatitis probably is not fully known. As Dr. Davis said, poor digestion and assimilation of food due to alterations in the saliva, in gastric juice, and in the mucous membranes of the stomach resulting from the consumption of alcohol over a prolonged period of time, and also modifications in the diet, including the substitution of vitamin-free alcohol for foods containing vitamins, are, in the light of our knowledge, factors in the causation of the disease. It is possible that alcohol may cause the disease through its effect, although unknown, upon the liver. In thinking further of the etiology, we must say that the constitutional factor may play a part, perhaps the chief part, in the causation of acute cirrhosis and that the ingestion of alcohol may facilitate its development. If this is true, alcohol would be a contributing rather than the chief factor.

In the treatment of patients with acute intoxication, Dr. Davis stated that he prescribed vitamin B complex as soon as the individual could take a regular diet. Since large doses of thiamine chloride have recently been employed in the treatment of acute alcoholism, I should like to ask him to comment upon its use in his discussion.

DR. DAVIS, closing the discussion: I should like to thank Dr. Seward for his discussion of my paper and would emphasize that these patients of mine were relatively young but their disease was subacute, that they may be seriously ill and even die from liver failure. The chief object in treatment is to restore liver function. As immediate treatment I feel that large quantities of glucose are necessary and it probably is helpful to use appropriate amounts of regular insulin.

Thiamin chloride is certainly indicated for the individuals who have evidence of polyneuritis and it is suggested in the literature that it may be a direct help to the liver given at very frequent intervals. In addition, these individuals should receive vitamin B complex.

I believe that liver extract parenterally should certainly be given to those cases which show a macrocytic anemia and my experience leads me to believe that it has a good effect even if there is no anemia, although I cannot give you a definite reason for this.

XUM

THE KENNY CONCEPTS*

E. M. FUSCO, M.D.,
Grundy, Virginia.

One of the major advances in medicine in the last decade was produced, not by an eminent scientist, clinician, or surgeon, but by a simple Australian bush nurse. Her name was Sister Elizabeth Kenny. Her contribution was a new concept of infantile paralysis and a new treatment for that concept.

Laughed at and scorned by the medical profession for thirty years, her work has been recognized in the United States for only four years. The only center which is doing any sustained and accurate work on the Kenny system in this country is the University of Minnesota, at Minneapolis.

To appreciate the magnitude of her work, a study of the Sister's life is essential.

Sister Kenny is an elderly woman of magnificent carriage and stature. Her challenging figure is topped by a face which is stern and unbending except when she is handling children. She has given a lifetime and personal fortune to the care of paralytics.

Sister Kenny was a self-made nurse in the wild bush country of Australia. She studied anatomy for two years under Dr. Aeneas John McDonnell, and in that time she learned the origin, insertion, and function of every muscle in the human body. Her practical and clinical studies of muscles may cause a revision of all anatomy texts. She believed that proper carriage and even mental attitudes are influenced greatly by muscle groupings and their application to living.

Taking care of a sickly brother stimulated her interest in the practical use of muscles. The Sister says she spent many years building his body, and only one who has seen the Kenny end-products can appreciate her end-results.

While traveling in the bush country, Sister Kenny came in contact with a series of cases which were all accompanied by fever, pain, headache, and prostration. At a loss for a diagnosis she sent a wire to Dr. McDonnell. His answer was, "It sounds like infantile paralysis. There is no treatment. Do the best you can."

She sat by their beds and began to wonder. A nurse is only trained to treat symptoms, to make the patient comfortable, so she began to study the symptoms. Having read never a word about infantile and with a mind unfettered by medical complexities, she came to a series of startling conclusions.

The first thing she noticed was that the patients were in great pain—heads were drawn back, feet were dropped, and the great muscle groups stood out like cords. When she touched these cords, the pain became more severe. She did not visualize paralysis—to her these muscles were in spasm. In the nurse's repertoire there is only one treatment for painful muscles, the use of hot foments. Out of these studies grew the great Kenny triad of spasm, alienation, and incoordination. But at least half the Kenny system is her muscle re-education which has made a shambles of the old concepts of physiotherapy.

To properly evaluate the Kenny concepts it is necessary to compare the old and new systems.

The pathology shows a diffuse involvement of the meninges, brain substance, and cord with particular reference to the anterior horn cells where most of the degeneration takes place. With these Sister Kenny cannot argue, because she is not a scientist.

The symptoms by the old system are flaccid paralysis, pain, and deformity. By this system, a foot-drop is caused by a paralysis of the anterior tibial with the opposing normal posterior tibial and gastrocnemius pulling the foot out of position. Pain and opisthotonos were believed to be caused by irritation of the nerve roots. Deformity was the trademark of polio in the old system, and this was prevented or treated by the use of splints. However, Steindler, of the University of Iowa, states that 25 per cent of polio patients develop deformities even in splints.

The symptoms by the new system are spasm, alienation, and incoordination.

Spasm is considered to be a painful shortening of muscles. Biopsies taken of living muscles in spasm show no changes, but very few muscle studies have been done. These muscles cannot be forced into normal position, even with pentothal anesthesia.

*Read at Dickenson-Buchanan Medical Society, December 16, 1942.

They do relax better with spinal anesthetics. Pain is caused by spasm.

Alienation is the term applied to the state of the muscle opposite the one in spasm. In other words, the muscle opposite the one in spasm is alienated and not paralyzed. The patient learns he cannot stretch the spastic muscle so the opposed muscle is alienated. This is a physiological block. However, Sister Kenny does admit that there is paralysis in about 17 per cent of cases.

By the old theories in a foot-drop, the anterior tibial muscle was paralyzed, the gastrocnemius pulled the foot down, and there was a foot-drop. By the old treatment, a few days' rest to get over the acute phase and then splinting, splinting, splinting—and finally braces, casts, and surgical repair.

The Kenny method conceives it as follows: By some unknown mechanism, the gastrocnemius is thrown into spasm and the foot is dropped. Finally, alienation takes place and a permanent deformity of foot-drop. The principle of the Kenny treatment is to release the spasm by hot foments and then begin muscle re-education, stimulating a path through the blocked myo-neural pathway.

The third important Kenny concept is incoordination. This is the result of improper muscle function and improper convalescent use of muscles. The result is deformity and peculiarities of stature and gait.

By the Kenny method there are no deformities, no braces, and very little if any incoordination. At the Gillette State Hospital in Minneapolis, there have been no admissions for polio deformities for several years. As a result of the lack of deformities, the orthopedic service has had no restorative work.

In other words, Sister Kenny believes infantile paralysis is a disease of muscles or, as she calls it, "a muscle condition", and she has evolved a treatment for that condition.

Sister Kenny despises the word hot-packs. She coins the phrase "hot foments". In this method, water is heated to boiling. Wool packs which have been cut to fit the patient are soaked in the boiling water. The packs are removed, pushed through a wringer twice to remove all the water, and then the pack is slapped directly on the affected muscle. It is then covered by a layer of oiled silk, and then by a cotton blanket which is pinned. The pack has been measured to have a temperature of 160 degrees and this is very, very hot. Speed in application is a vital part of the method and that is why hot-pack nurses working full-time are necessary in a large institution. The secret of not getting burns is using wool and getting every drop of water out of the pack.

In a severe case Sister Kenny packs the entire body from head to foot. When she first sees a case she does a muscle analysis without touching the patient and applies the packs accordingly.

The main portions packed are thighs, legs, feet, back, arms, forearms, hands, pectorals, and occasionally the abdomen.

By the Kenny concept breathing difficulties are due to spasm of the intercostals, sternomastoids, pectorals, and trapezii. Foments release these spasms. The Drinker respirator is physiologically unsound in that it whips an already tired muscle. There is no place for a respirator in the Kenny system.

After the spasm is diminished and acuteness has subsided, usually two or three days, muscle awareness and muscle stimulation is begun in bed. All this consists of is moving the affected part passively within the limits of his spasm.

When the spasm is well relaxed, the system of muscle re-education is begun. The first phase is three passive movements of the part just to show the patient what is expected of the part. At this time it is permissible to lightly stroke the insertion of the tendon. The second phase is two passives and an active. After the patient has been guided through two passives he is told to carry out the third maneuver by himself. The third phase is one passive and two actives. The end-result is three actives which means the patient is cured.

One patient was presented in the Minneapolis clinic—a girl of thirteen—with the most malignant type of polio. She was treated by the Kenny method from the beginning. When we saw her many months after the onset, there was no muscle power demonstrable in any of the leg muscles. Yet she was able to walk without braces and with the aid of a cane. She was also able to do housework.

By the old method, this girl would have been hopelessly invalided, and I do not believe she would have been able to walk even with braces. This was the "worst" result seen in the Kenny clinic, a failure by the Kenny standards—a success by any other standard.

XUM

Another of the Kenny theories is that a muscle contracts either inside or outside its normal resting length. The anterior tibial which normally contracts in its normal resting length is stretched so by the spasm of the gastrocnemius that it is forced to contract outside its normal resting length and this results in alienation of the anterior tibial.

Another cause of respiratory distress and inability to swallow is spasm of the posterior neck muscles. Many of these cases are not true bulbar cases and are quickly relieved with heat.

Another Kenny concept is that the gluteus maximus is not an extensor of the thigh but merely fixes the thigh to the pelvis. This will be a cause of considerable anguish to anatomists.

Another key muscle in the Kenny system is the psoas which is the chief flexor of the thigh. Loss of use of the psoas without its re-education will result in incoordination of the thigh on walking.

Another key group are the long muscles of the back. Scoliosis and lordosis are only two of the severe deformities seen by the conventional treatment. Now we know that these deformities are produced by contractions of the long back muscles, or psoas, and their release from spasm will in 100 per cent of cases correct the deformities before they begin.

An old bogey was the "abdominal paralysis" which was often described by orthopedists. This condition is no longer seen. We know now that it is due to spasm of the pectorals and back muscles resulting in alienation of the abdominal muscles. A Kenny patient never has abdominal paralysis.

In conclusion, let me say that I went to Minneapolis to jeer and returned to cheer. There is much to be done and much to be explained. But Sister Kenny has given us a push in the right direction.

THE PHYSICIAN'S RESPONSIBILITY IN PLANNED PARENTHOOD*

H. HUDNALL WARE, JR., M.D.,
Richmond, Virginia.

Recent studies of the causes of maternal deaths have resulted in a marked reduction of deaths associated with child-bearing. In Virginia in 1931 there were 7.8 women who died for every 1,000 babies born alive. In 1941 this rate was reduced to 4 maternal deaths per 1,000 live births.

This decrease in the risks associated with childbirth in Virginia is a direct result of an educational program for the physicians, and the patients, and the extension of the State Health Department's Prenatal Clinics.

Physicians are continually searching for the causes of disease and improved methods of treating patients. Accurate statistics and analysis of results obtained in treating various medical diseases enable us to determine the value of the treatment used and the factors influencing our results.

Only the physician is in a position to advise a woman about her physical condition and the safety or danger associated with pregnancy. The value of most methods of contraception used by women depends upon several factors, some of which can be determined only by careful examination. Therefore, every woman should be examined by a physician before pregnancy occurs. If pregnancy is contraindicated because of the patient's physical condition, her physician should advise her as to the most suitable method of contraception or refer her to a physician or clinic where she can obtain this advice.

Patients who wish to postpone pregnancy without medical indications should be advised that the child-bearing age is limited and that diseases of the heart, vascular system, and kidneys increase with age and frequently make pregnancy unsafe. One should also remember that tumors of the uterus and ovaries sometimes necessitate operations during the child-bearing age which prevent the occurrence of pregnancy later.

Ten per cent of American wives are childless, and many of these women are anxious for children. The Virginia League for Planned Parenthood and The Planned Parenthood Federation of America are vitally interested in this group of women who want children.

The purpose of the organizations interested in planned parenthood were summarized in a recent paper by Dr. N. J. Eastman, Professor of Obstetrics

*Read before the Medical Society of Virginia at its annual meeting in Roanoke, October 5-7, 1942.

at Johns Hopkins University. He stated, "Birth control means the regulation of conception in such a manner that the best interests both of the nation and of the individual family are served. Contrary to general opinion, the directing influence it would hope to exert is positive as well as negative. It is interested not only in contraception, but also in the encouragement of child-bearing among those who are suitable parents. The distressing problem presented by 10 per cent of American wives who are childless is very much its concern. On the negative side, let it be noted, it embraces not only those vaginal technics with which its name has been almost exclusively associated, but also such procedures as sterilization (tubal ligation) and therapeutic abortion."

In 1928 it became evident to a group of physicians in the out-patient clinic of the Medical College of Virginia that patients visiting the various clinics were often poor risks for pregnancy, or should be studied for a period of months before pregnancy should be attempted. The problem was discussed and finally it was decided to refer these women to the obstetrical department for examination and advice as to the best method of contraception for each patient.

In 1929 a group of patients had accumulated who came in regularly for contraceptive advice, some because of cardiac disease or hypertension, a large group with kidney disease, or a history of pregnancy and severe toxemia. Others came in because of tuberculosis, diabetes, and less frequent complications. All patients were examined carefully, and an honest attempt was made to individualize the treatment for each patient.

No funds were available in the college for the contraceptive clinic and at first it was financed by a gift from the Richmond Junior League and later by donations from interested individuals. Since the number of patients has increased, additional funds have been secured from The Richmond Maternal Welfare Association and The Virginia League for Planned Parenthood.

The maternal welfare clinic at the Medical College of Virginia is a part of the obstetrical clinic. An attempt is made in the hospital and home delivery service to have every obstetrical patient return to the postpartum clinic within six weeks after delivery. These patients are all examined by physicians in the clinic, and if the woman's physical condition is such that pregnancies should be spaced or avoided, she is advised as to the best method of contraception for her individual case.

The postpartum clinic where a record of the patient's condition during pregnancy, labor, and the puerperium is available is certainly the most suitable place for an accurate estimate of the advisability of future pregnancies. It is the author's opinion that any physician or clinic attending obstetrical patients fails to give complete maternity care unless the advisability of future pregnancies is considered and patients in whom pregnancy should be postponed or avoided are given advice as to the dangers of pregnancy and a suitable method of conception control.

In the postpartum clinic of the Medical College of Virginia during 1941, 120 patients were given foam powder and a sponge; and only three pregnancies have occurred in this group, 2.6 per cent failures. Sixty-eight patients were given a vaginal jelly and diaphragm; and three pregnancies have occurred in this group, 4.4 per cent failures. In another group 490 patients using Ortho vaginal jelly from one to ten months only two pregnancies have occurred, 0.4 per cent failures. This is an uncorrected rate of 1.18 per cent failures for 678 patients in one year.

Chemical and mechanical contraceptives have a definite place in preventive medicine when properly used in suitable cases.

For those patients with advanced cardio-vascular renal disease and other complications in whom pregnancy should be avoided permanently, sterilization by tubal ligation is probably the method of choice.

Reliable and conservative estimates indicate that one-fourth of all maternal deaths in child-bearing occur because the women are unfit subjects for pregnancy as a result of former pregnancies and acute and chronic disease processes.

Last year, 1941, we examined 1,025 women in the Maternal Welfare Clinic at the Medical College of Virginia. Seven hundred and four of these patients were new, and 321 were old patients who returned for further study. Four hundred and eleven of the new patients were considered as candidates for contraceptive advice and were given some type of contraceptive.

At the present time we are carrying out a study to determine which type of chemical contraceptive is most acceptable to the patient, effective in controlling

XUM

conception, and the comparative value of diaphragms and vaginal sponges in selected cases. This study was made possible by a grant from the Ortho Products Company, Inc., and a grant from The Planned Parenthood Federation of America, Inc.

Our results indicate that when the woman uses a contraceptive, most of them prefer a contraceptive jelly, and with a good contraceptive jelly 98 patients in every 100 can control their pregnancies. Other patients prefer a diaphragm and jelly, while another group has had good success with a vaginal sponge and jelly. Foam powder and a vaginal sponge has not been an acceptable method to most of our patients.

We think our clinic represents a healthy growth, the result of a need met by an interested lay group and interested members of the medical profession. The Richmond Chapter of the Virginia League for Planned Parenthood raises the necessary funds, and the physicians give their time to the clinic. Each patient is examined by a physician and then interviewed by a clinic nurse. The excellent work of the nurses is an essential part of any successful clinic.

The indications for birth control fall naturally into certain well defined groups.

Medical: Repeated toxemias of pregnancy increase both the maternal and infant mortality. Chesley at the Margaret Hague Maternity Hospital studied 466 women who had hypertension or other signs of toxemia in one pregnancy and were followed in a subsequent pregnancy. Twenty-three and one-tenth per cent of the subsequent pregnancies terminated in an abortion or still-birth. The risk to the mother depends upon the severity and duration of the toxemia. Some form of pregnancy toxemia is the most common cause of maternal deaths in Virginia and the second most common cause of maternal deaths in the United States.

Heart disease complicating pregnancy ranks fourth among the causes of maternal deaths in the United States and 7 per cent of the women who die in childbirth have heart disease.

Hamilton and Thompson have shown that the maternal death rate for favorable cardiac patients is 2.5 per cent, which is very little increase over the yearly death rate of 2.0 per cent for non-pregnant cardiacs of the same type.

The same authors state that the maternal death rate for severe cardiacs with auricular fibrillation is 33.3 per cent, more than four times the yearly death rate of 7.9 per cent for non-pregnant cardiacs of the same age and type.

Pulmonary Tuberculosis: Recent investigations indicate that patients with tuberculosis, if treated properly during pregnancy and for one year after delivery, show very little difference statistically from those patients with tuberculosis who do not become pregnant.

This statement does not cover the whole problem, because relatively few women with tuberculosis in Virginia can be treated with proper medical care, diet, and rest during pregnancy and for one year after delivery. A tuberculous mother should be separated from her baby for at least one year after delivery or until she is non-infectious, and she should have help for a much longer time.

An extreme illustration of this point is the Virginia family in which the father was diagnosed as having advanced tuberculosis, but refused hospital treatment. Eventually his wife had eleven children; ten of the children and the wife had tuberculosis. Ten members of this family were treated in sanatoria at state expense.

Contraceptive advice should be available to all tuberculous patients so that they may prevent conception when it is safe for them to attempt pregnancy.

Diabetes, multiparity, and too frequent pregnancies all increase maternal and fetal mortality.

Dr. Eastman has shown that at Johns Hopkins the maternal mortality varied between 3.55 and 3.78 per thousand deliveries through the fifth pregnancy. As the parity increased, the maternal mortality increased; and for the ninth and later pregnancies 11.73 women died per 1,000 live births, an increase of three times the death rate for women during the first three pregnancies.

In 1925 Woodbury made an exhaustive study of causative factors in infant mortality in several cities. This study showed that when the interval between pregnancies was three years, the infant mortality was 8.65 per 100 births. But when the interval between pregnancies was one year, the infant mortality was 14.67 per 100 births, almost twice as great.

It is well recognized that the modern physician not only treats patients who are ill, but he attempts to correct minor ills and advise a plan of living that will keep his patient well and happy.

Preventive medicine has made rapid progress in

many fields, and the reduction of maternal deaths in Virginia from 8 to 4 per cent in ten years is due largely to the improvement in medical care and the program of the Virginia State Health Department, which has established prenatal clinics in the smaller communities for pregnant women unable to pay for medical service. These clinics are staffed by local physicians who are assisted by the local health departments. As the clinics are all under supervision of physicians, I hope that any mother who needs contraceptive advice may ask for and obtain this advice in these clinics. Control of conception is certainly preventive medicine in many cases, and the obstetrical clinic is the logical place for this type of work.

The medical schools have recently awakened to their responsibility in doing research in contraceptives and teaching the indications for and the techniques of various contraceptive methods. The inclusion of regular lectures on contraceptives in the medical schools is an essential part of our educational program.

The interest of Virginia physicians in conception control was clearly shown in a report published in the VIRGINIA MEDICAL MONTHLY in March, 1935. Early in the same year a questionnaire was mailed to all members of our State Society, a total of 1,833 physicians. Four hundred of the questionnaires, or approximately one in four were returned with 86.5 per cent favorable to birth control. There were thirty-nine physicians specializing in obstetrics and gynecology who answered the questionnaire. Only one of the specialists was opposed to birth control under medical supervision, while 94.87 per cent were favorable to birth control.

The need is present. Let us, as physicians, meet it in a scientific and courageous manner.

REFERENCES

Eastman, Nicholson J.: Review of Recent Progress, *New International Clinics,* Volume I, Series 5, 1942.

Hamilton, B. E., and Thompson, K. J.: The Heart in Pregnancy and the Child-Bearing Age, Little Brown & Co., Boston, 1941.

Woodbury, R. M.: Casual Factors in Infant Mortality, Children's Bureau Publication, No. 142, 1925, Government Printing Office, Washington.

Carson, A. L.: Virginia State Department Health, personal communication.

Chesley, L. C., Sowers, W. H., Gorenberg, H. R., and McGeary, J. A.: Analysis of Some Factors Associated With Post-Toxemic Hypertension, *American Journal of Obstetrics and Gynecology,* 41:751, 1941.

816 West Franklin Street.

DISCUSSION

DR. W. R. PAYNE, Newport News: Dr. Ware has in a comprehensive manner given you a fine discussion of the work being done by the Virginia Society for Planned Parenthood. Too often that organization has been looked upon as one fostering the dissemination of various methods of contraception to women of all groups and classes. Dr. Ware's paper has demonstrated to you quite well that that is not the case and that actually contraceptive measures represent only one part of a large program which is fostering better prenatal and postnatal management.

There are certain women who are inadequate physically to withstand a pregnancy, even up to twenty-eight or twenty-nine weeks, when there is a possibility of getting a live baby. By being allowed to become pregnant their lives are undoubtedly shortened, and their attempt to have a living child is a failure. Until some concerted effort is made to education and control these cases our present high rate of maternal and fetal mortality will not be reduced. It is my opinion that education of the profession and of the laymen is the starting point.

More specifically, this program of education should emphasize the following points: First, every young couple contemplating marriage should have the advantage of physical examination before marriage and should have the findings discussed with them. We should emphasize to young people the importance of having babies early in their married life. Dr. Ware has pointed out the relative risk of pregnancy at different ages. A thorough physical examination should be done before any pregnancy, if possible. Many of us realize how impossible that often is. When having Wassermanns done before marriage these girls can have a chest examination and a pelvic examination; thus every newly married woman in the State can have the opportunity of being checked up before her first pregnancy, as Dr. Ware suggested. When our patients come back for the postpartum checkup there is a good opportunity to consider the advisability of having another child. If it is not safe she should be so advised, and she ought to be given the benefit of what we know about contraceptive measures, and not left to be ill-advised by friends or relatives.

We know that pregnancies occurring too close together carry with them a higher mortality and that mortality rises rapidly after the fourth.

I shall say very little about the various methods of contraception. We know there are some fairly reliable methods. In all of the cases requiring contraceptive advice we ought to decide whether this patient requires temporary measures for protection or whether she is a person who has a chronic disease, such as nephritis, T. B., or cardiac insufficiency, requiring permanent protection. In those cases I strongly advocate sterilization.

Sterilization is a rather simple procedure, done fol-

XUM

lowing a delivery, or as an interval operation. We think that doing this operation at about the third day, which has been advocated by Dr. Adair, of the Chicago Lying-in Hospital, is a very safe and simple procedure. It can usually be done under local anesthesia. It lengthens the hospital stay by about three days; and, so far as is surgically possible, it saves the patient the danger of future pregnancies and avoids the problem of using any mechanical devices.

I want to emphasize again that this is an important subject and should be a part of future programs. Every doctor who practices obstetrics should be in possession of these charts, which are obtainable by writing to the Department of Labor, at Washington.

PULMONARY DISEASES CAUSED BY DUST*

H. F. EASOM, M.D.,
Associate Superintendent and Medical Director, Eastern North Carolina Sanatorium, Wilson, N. C.

Pneumoconiosis is the term used to describe all dust diseases of the lungs. Because of numerous law suits and the enactment of occupational disease laws in many states it has become a subject of ever increasing interest, not only to the medical profession, but also to industry, labor, insurance companies, and the legal profession.

It is not a recently discovered disease. We find that as early as the sixteenth century Agricola, a mining engineer, described dust conditions in dry mines and warned that dust "penetrates into the windpipe and eats away the lungs and implants consumption in the body". Later, in 1700, Ramazzini published a comprehensive volume dealing with occupational disease in practically all of the trades and professions known in his day. Of stone workers he says: "They oft times suck in by inspiration the sharp and rough cornered particles or splinters that fly off, so that they are usually troubled with a cough and some of them are asthmatic and consumptive." Modern industrial tools and processes which create very high concentrations of dust and the economic depression, which indirectly resulted in numerous law suits for silicosis, have caused us in recent years to focus attention on the subject.

There are as many kinds of pneumoconiosis as there are kinds of dust, and many of them have been named to indicate the type of dust responsible. Only two of these, silicosis and asbestosis, caused by inhalation of free silica and asbestos dusts respectively, are known to be clinically important and capable of causing disability. Other dusts, such as granite and pyrophyllite, have been suspected, but in each instance it has been shown that the free silica present caused the silicosis.

*Read before the Seaboard Medical Association of Virginia and North Carolina, at Wilson, N. C., December 3, 1942.

Gardner suggests that the lung changes caused by dusts which do not contain free silica be classified in a group known as "benign non-specific pneumoconiosis". Examples of this group are siderosis from iron dust, anthracosis from coal dust, and many others. Prolonged inhalation of these so-called inert dusts may result in exaggeration of the linear markings as visualized on an x-ray film, probably as a result of simple accumulation of dust along the lymphatics rather than of fibrosis. At any rate, it does not develop to a stage of clinical importance.

It appears, therefore, that only silicosis and asbestosis merit serious consideration, and of these silicosis is the more important because of the much larger number of workers exposed to silica dust.

Silicosis may be defined as abnormal fibrotic changes in the lungs caused by the inhalation of free silica. When we realize that silica, or quartz, is the most constant constituent of the rocks and minerals that go to make up the earth's crust, it is obvious that those occupations associated with mining of various types, mineral grinding, rock quarrying, stone cutting, tunnel driving, and the manufacture of brick and tile often expose workers to silica dust in harmful amounts. Exposures also occur in many industrial processes such as the manufacture of abrasive soap powder and in the foundry industry. Altogether, it has been estimated that approximately 500,000 persons in the United States are exposed to siliceous dust.

Ordinarily silicosis requires many years to develop. Even with very high dust concentrations serious disease seldom occurs in less than two years, and under conditions usually encountered it requires fifteen to thirty years.

Several known factors determine the harmfulness of a dust:

1. Its chemical composition.
2. Its concentration in the atmosphere.
3. The size of the particles.
4. The length of exposure.

Other factors, such as pulmonary infection and individual susceptibility, may also play a part.

The importance of chemical composition has already been indicated. Free silica must be present, and, other factors being equal, the silicosis-producing power of a dust increases in proportion to the percentage of free silica it contains.

The concentration of dust particles in the atmosphere about the worker is important. Fortunately, nature has provided us with rather efficient barriers to the entrance of dust into the lungs. The hairs of the nose and the moist mucous membranes of the respiratory tract act as traps, and ciliary action tends to expel particles, so that a normal person may safely breathe low concentrations of harmful dusts for years without ill effects. However, these protective mechanisms are unable to cope with high concentrations for long.

Dust particles, in order to be respirable, must be very small. In fact, only those less than 10 microns in size are considered harmful, and the majority of those reaching the lungs are less than 3 microns. Particles of this size may be created in high concentrations in such operations as sand blasting, rock drilling, stone cutting with pneumatic tools, and fine grinding of minerals; and they remain suspended in the atmosphere for long periods.

The essential feature of silicosis is the production of fibrous tissue. Inhaled dust particles are picked up by phagocytes in the alveoli and taken into the lymphatics which drain toward the hilum. Some are trapped in the small lymphoid deposits along the vessels and bronchi and others reach the tracheobronchial glands. Silica seems to have a poisonous effect on the phagocytes, causing them to die, and wherever these dead phagocytes accumulate along the lymphatics the silica stimulates the formation of fibrous tissue in the form of concentric whorls known as silicotic nodules. Eventually, if the dust exposure is heavy, there is partial blockage of the lymphatics. Some of the wandering cells enter the parenchyma and cause the formation of nodules there also. Then we have the typical picture of simple silicosis, namely, numerous discrete nodules, symmetrically distributed through both lungs. Fortunately, most cases come under this classification.

There is, however, a second type known as massive conglomerate silicosis. Here we may have massive conglomerate shadows occurring bilaterally and usually on a background of nodulation. As a rule these cases show marked emphysema. The etiology here is not clear, but Gardner states that in about 60 per cent of autopsies in this group he has been able to find evidence of tuberculosis. He feels that, in these cases at least, the massive type of lesion is probably accounted for by the combination of silicosis and tuberculosis. For the remaining 40 per cent he has no satisfactory explanation. In my own experience I have gained the impression that massive lesions occur most frequently among those workers exposed to high concentrations of dust having a high free silica content.

A third group of silicotics comprises those with pulmonary infection. Silicosis seems to favor the development of tuberculosis, which is by far the most frequent and serious complicating infection. Its appearance may range from small coalescing shadows on a background of simple nodulation to massive shadows involving the greater part of both lungs. Usually the development of such lesions is very gradual.

The discrete nodulation of simple silicosis does not cause symptoms, and, therefore, is usually discovered in routine industrial surveys. The massive type with the emphysema that usually accompanies it may cause disabling dyspnea and cough, but it is not unusual to see workers with such lesions carrying on their usual occupations with only mild symptoms. The third type, silicosis with infection, comprises only a small percentage of the total number of cases of silicosis; but it is the most important, because most of the disability and deaths occur in this group. The course of tuberculosis, the most frequent infection complicating silicosis, is usually chronic, and patients do not exhibit the toxic symptoms that ordinarily accompany uncomplicated tuberculosis. Quite often the only complaints are dyspnea and cough, resulting in a decreased capacity for work. Weakness, loss of weight, and fever are frequent late symptoms.

The diagnosis of silicosis requires, first of all, a history of adequate exposure to silica dust and, secondly, a characteristic x-ray pattern. Both must be present. Physical examination is of little value.

XUM

Besides silicosis, the other important type of pneumoconiosis is asbestosis, caused by prolonged inhalation of asbestos dust. It is of especial interest in North Carolina because we have approximately 500 persons in the asbestos industry, many of whom have been found to be affected. Asbestos is a fibrous mineral, magnesium silicate, which can be spun and woven into cloth, tape, brake bands, and other woven products or ground and used in paints and paper. It does not contain free silica. Inhalation of this dust over a period of years produces a different type of pathology from that of silicosis. According to Gardner, the dust particles are deposited mainly on the walls of the terminal bronchioles, where they stimulate formation of a fibrous cuff. As this contracts, it narrows the lumen and finally prevents air from penetrating into portions of the lung supplied by the bronchiole in question. This eventually results in both atelectasis and emphysema. The x-ray appearance of asbestosis is rather characteristic. Over the middle and lower portions of the lung there is a ground glass appearance, tending finally to obliterate the linear markings. In advanced stages the heart outline often becomes shaggy in appearance and the excursion of the diaphragm limited. Nodulation and conglomerate areas which frequently occur in silicosis are not seen in asbestosis. Also, there is no evidence to indicate that asbestosis influences the development or course of tuberculosis in any way. The most distressing symptoms are dyspnea and a rather non-productive cough, and these are usually much more marked than would be expected from the x-ray findings. The average length of exposure required for the development of asbestosis is less than for silicosis. The diagnosis requires a history of adequate exposure and a characteristic x-ray pattern.

The solution of the silicosis and asbestosis problem lies in prevention, because neither disease can be cured. It is chiefly an engineering problem and requires the control of harmful dust by various measures, such as exhaust ventilation, wet methods, isolation of dusty operations, good housekeeping, substitution of materials, and the use of approved respirators. Medical examinations both before and during employment are desirable to weed out those workers who have tuberculosis or other serious lung conditions which may increase their susceptibility to the effects of dust and all those who have developed silicosis or asbestosis to a degree which makes it dangerous for them to continue in a dusty atmosphere. In North Carolina such a program has been under way since 1935, when the General Assembly passed the Occupational Disease Act, which made silicosis, asbestosis, and 23 other occupational diseases and conditions compensable and required both pre-employment and routine medical and x-ray examinations of workers exposed to siliceous dust. Approximately 17,000 such examinations and re-examinations have been made to date, including the workers in practically all dusty operations in the state employing more than five people. The results of these examinations have made it possible to spot the dangerous jobs, so that now industrial hygiene engineers and industry can work out suitable control measures. It is reasonable to assume that the continuation of such a program will eventually make asbestosis and silicosis very rare diseases.

HYPERTENSIVE ARTERIAL DISEASE*

ERNEST L. COPLEY, M.D.
Richmond, Virginia.

Hypertensive arterial disease is one of that group of disease conditions which have inevitably become more numerous with the prolongation of the life-period. There's nothing strange about the fact that as more persons escape death in childhood more persons arrive at the time of life at which hypertensive arterial disease is prone to develop. Each case is potentially one of heart enlargement and failure, unless some vascular catastrophe intervenes. It is estimated that twice as many of our people die of hypertensive arterial disease as of cancer. A keen observer[1] gives hypertensive heart disease—a sequela of arterial disease—first place in the list of important types of heart disease, and estimates that, in the Southern States, the hypertensive form makes up from 40 to 60 per cent of all heart disease.

Many workers, clinical and laboratory, are now engaged with this problem. A number of cases of

*Read before the annual meeting of the Medical Society of Virginia, at Roanoke, October 5-7, 1942.

hypertension due to unilateral renal disease amenable to surgical cure have been reported. Several studies have been made on the incidence of hypertension in children and adolescents. Instead of the pessimism of other years, confidence and enthusiasm are felt by those seeking to advance our knowledge of this baffling disease.

Generally speaking, hypertensive arterial disease does not follow one cause or one kind of injury to the arterial system, but a combination of causes and superimposed injuries. The period of alcoholism, the instance of infection or pregnancy, or the bout of nephritis may be far in the past. Any one of these alleged causes of a certain case of arterial tension may have long ceased to exist, while the resulting disease process continues inexorably on its destructive course. An apparent multiplicity of factors and marked chronicity of the process, therefore, make it difficult to determine, at this stage of investigation, the time of onset and cause of the great majority of cases of hypertensive arterial disease.

Likewise, the structural changes found in a case of hypertension may be complex and widespread, particularly within the walls of the small arteries and arterioles. The spirally arranged small muscle fibres of these little arterial ducts are under direct control of the sympathetic nervous system, and have a tonus or tension which is necessary for normal blood flow. In health, the resistance of these arteries plus the inertia of the blood on the one hand, and the propulsive force of the heart on the other, are in a state of delicate balance. Increase in the resistance to the blood flow necessitates an increase in the propulsive force of the heart to maintain the state of balance. Renal ischemia may act through the sympathetic system to produce a temporary hypertonia of the small vessels and repetitions of this sequence of events tend to cause thickening of the walls of the small arteries and arterioles. In cases in which this hypertonia becomes constant it would seem that the progressive and persistent changes of arterial disease, replacement of elastic muscle tissue of their walls by inelastic collagenic connective tissue, are inescapable.

The structural changes going on over varying lengths of time give rise to permanent elevation of systemic blood pressure. A pathologic state of hypertension exists in many cases in which no such arterial changes are to be found, and these cases, for want of a better term, we label idiopathic or essential hypertension.

It is generally said that foci of infection, maladjustment of the dietary, fatigue, alcoholism, endocrine dysfunction, metal poisonings, hereditary predisposition, renal ischemia and various renal lesions are important factors in the causation of hypertensive arterial disease. Except for renal disease, little evidence has been adduced to incriminate any of these alleged factors. Nevertheless, any one of them present in a given case is generally regarded as a satisfactory explanation of the hypertension. Many experiments on the kidneys of laboratory animals have elevated the blood pressure; and nephrectomy has been performed in a considerable number of cases of unilateral kidney disease in man, with resultant lowering of the elevated blood pressure. However, widely divergent views are held as to the renal origin of hypertensive vascular disease.

Omitting, therefore, any discussion of the factors generally accepted as causes, I shall examine, at this point, the divergent views as to the renal origin. Dr. Richard Bright,[2] more than a hundred years ago, suggested that the "altered quality of the blood" affected the minute and capillary circulation, so as to render greater action necessary to force the blood through the distant subdivisions of the vascular system. This, he thought explained the left ventricular hypertrophy; and he fixed on the kidneys the responsibility for this altered quality of the blood. After more than a century of speculation and investigation we are still far from agreed on the subject. An opposite view and one now held by many is that "essential hypertension is merely a collective concept for a number of conditions, having in common the positive characteristic of hypertension, and the negative one of—absence of renal disease."[3]

In support of this theory are the facts that in many instances the blood pressure is elevated for years before there is any evident impairment of renal function, and that a very large number of patients with essential hypertension, after many years die of heart failure or a cerebral accident, having never shown evidence of renal insufficiency. Still many have adhered to Bright's conception that renal disease causes hypertension and hypertensive arterial disease. And his theory has given direction to most experimentation and influenced most observations.

XUM

Arteriolar disease of the kidney had been observed in cases of essential hypertension, and the possible functional effects of arteriolar sclerosis in causing progressive renal ischemia had been speculated upon for some time. It was along these lines that Goldblatt[4] and his associates began their investigations in 1928, which aroused fresh interest in renal hypertension. Unable to constrict the million afferent glomerular arterioles of the laboratory animal's kidney, as does arteriolar nephrosclerosis those of the human kidney, he constricted the main renal artery by means of a clamp so designed that any degree of narrowing up to complete occlusion of the vessel could be produced. With such a clamp, he constricted the renal artery of one kidney, in both the dog and monkey, and produced an elevation of the systolic and diastolic blood pressure which lasted for weeks. On loosening the clamp, or removing the kidney, the blood pressure was found to return to normal. Likewise, by clamping off both the renal arteries of the dog and the monkey he produced persistent hypertension, the counterpart of malignant hypertension in man. He showed that hypertension with uremia could be produced in a dog already having hypertension due to clamping off one renal artery, by clamping off the other artery also. Of particular interest was the occurrence of hypertension, *with and without* renal excretory insufficiency. Yet, the elevation of blood pressure in both of his experiments was clearly of renal origin.

Supplementing the experiments of Goldblatt, severe hypertension has been brought about in animals as a result of perinephritis produced by wrapping the kidney in cellophane or silk. A thick fibrocollagenous constricting hull forms around the parenchyma, but not the pedicle.[5] The renal ischemia thus produced is followed by a rise in the systolic and diastolic blood pressures. Removal of the diseased kidney, or of the hull around the kidney, abolished the hypertension.

The clinical counterparts of the animal experiments have been found in man, confirming almost every important point learned about renal hypertension in the animals. Well-authenticated cases have been reported, in which embolization of one or both renal arteries has produced a pronounced rise in arterial pressure. A case has been reported[6] of a student, aged 16, who was found to have a blood pressure of 154/102. Inquiry revealed that at the age of six he had been struck over the right kidney. It was said that the urine remained normal. At operation a large cyst was found about the kidney containing 800 c.c. of chocolate-colored blood. The cyst and the kidney were removed. After nephrectomy, the blood pressure promptly returned to normal. Dr. Frederick Palmer and the late Dr. Soma Weiss[7] concluded that the association of hypertension pyelonephritis is more than accidental. Barker and Walters[8] have reported in some detail five cases of unilateral chronic atrophic pyelonephritis along with hypertension in which prompt relief was afforded by the removal of the diseased kidney. Freeman and Hartley, of Chicago, have reported[9] the case of a man, aged 37, suffering an injury to one kidney, making its removal necessary. The blood pressure remained within normal limits for 16 months after nephrectomy, when hypertension and uremia both were found to exist. His blood pressure rose before death to 290/170. An autopsy revealed ischemia of the kidney due to an athermatous particle occluding the renal artery.

Reports have come from various clinics of relief of hypertension by removal of a diseased kidney, of numerous such successful operations on children. It seems, therefore, certain that renal disease is a definite cause of hypertension in certain cases. Whether it solves the problem in more than a small fraction of the cases remains for further investigation.

It is known from life insurance statistics that increase in the incidence of hypertension takes place in both sexes after forty years of age; and that the incidence continues to increase with advancing age. The pre-hypertensive state in children and adolescents is receiving much more study than heretofore. At Rochester,[10] in 1937, an examination of the blood pressure reactions from placing the hand in ice water made on 400 school children of 6 to 19 years disclosed that 18 per cent of the children, some of 6 years, hyper-reacted as to systolic and diastolic pressures. Ten of the group gave a very high maximal response to the test. The highest response was 190/130, the lowest 170/110. There was no evidence of nephritis or organic heart disease in any of these children. A similar study of 1,500 adults, among whom were those who had a temporary rise in blood pressure ten or twenty years previously, was made by the same investigator[11] in 1940. A considerable percentage of the hyper-reactors now had

fully developed hypertension; while the normal blood pressures of ten and twenty years before had remained normal.

I believe this pre-hypertensive state is far more common among young college men and women than is generally realized. Alvarez[12] reported an incidence of 22 per cent of mild hypertension in 6,000 freshmen. These had a systolic pressure exceeding 140, while 45 per cent of the group had a pressure exceeding 130.

Palmer,[13] of Boston, in a study of the records of 3,500 routine physical examinations at Harvard, found a systolic pressure of more than 140 in 10 per cent and more than 150 in 2 per cent. After ten years, he obtained data on 49 of the persons with elevated blood pressure, and found that 22.5 per cent of the group had hypertension; while in 66 without elevated blood pressure ten years before, only 4.5 per cent had blood pressure of more than 140. His conclusion was that, "if hypertension is found at twenty years of age, it is somewhat more likely to be found persistent after ten years than it is to develop *de novo* during this interval."

In an analysis of 200 selectees, 140 white and 60 colored, I found two white and two colored, all under 30 years, with hypertensive arterial disease sufficiently advanced to give symptoms and to disqualify for any form of military service. This is only 2 per cent of a small but typical cross-section of the population. During the past two years, a routine blood pressure reading taken on 200 college and high school students revealed two to have blood pressures of 170/100; and twenty with blood pressures of over 140/90.

During the past year, I have treated three children with acute glomerular nephritis whose blood pressures, in the acute stages of the disease, ranged as high as 160/100. The blood pressures of the three returned to normal after the infection subsided. The renal origin of hypertension in cases of glomerular nephritis is generally conceded.

A study of the frequency of hypertension in the young may contribute much toward an understanding of its etiology and treatment. We would do well to study the hereditary background of every case of hypertension in children and adolescents. It may be that the psychiatrists can contribute much to guiding and directing the emotional life of some of these patients. It is obvious that the young ought not to be alarmed about their blood pressure. There is more than one way of taking blood pressures. I do the job as casually as possible and do not inform the patient what the reading is, unless some other physician has done so. I have concluded that a carefully checked blood pressure reading at intervals is as important in a routine examination as the urine and Wassermann tests.

The crippling effect of hypertensive arterial disease on the older groups constitutes as much of a problem as does cancer. A study made at the Massachusetts General Hospital of the underlying causes and precipitating factors in 1,000 cases of congestive heart failure, resulted in nearly 50 per cent of the cases being ascribed to hypertension.

I have undertaken to determine the part that hypertensive arterial disease played in the deaths of 82 cardiac patients of my own in the last ten years. Thirty-seven of these were colored, 45 white. Twenty-one of the colored were females, 16 males. The underlying cause of the cardiac death in 21 cases was hypertensive arterial disease. Six of the 21 had malignant hypertension, with blood pressures ranging from 220 to 260/120 to 170. Five of the six died suddenly with apoplexy, and one of a profuse pulmonary hemorrhage. The average age of these six was 56. Four, three males and one female, died of hypertensive arterial disease complicated by coronary-artery disease. In eleven cases, in which hypertension was the chief factor in producing myocardial failure, death followed several years of invalidism—brought on either by an apoplectic stroke or by congestive heart disease. The average age of these eleven was 56 years. The average of the other 16—in which hypertension was *not* a factor—was 63 years. Nephritis was a factor in six of the hypertensive cases, syphilis in three.

Eighteen females and 25 males total up the 43 deaths of whites. Of these, hypertensive arterial disease was the chief cause in the deaths of six females and six males. Two of these, aged 45 and 48 respectively, had malignant hypertension with blood pressures of upwards of 270/170, and died suddenly of apoplexy. Four died of cerebral hemorrhage in the course of a few months. Two died suddenly of coronary occlusion, while four others died of congestive failure due to hypertension. The average age of these 12 was 59 years; of the other 31 in which hypertension could *not* be said to be a factor in causing death, 72 years. Nephritis was a known factor in three of the hypertensive cases.

XUM

Syphilis was *not* a factor in any case.

I have grouped for the purpose of study 101 cases of hypertensive arterial disease with hypertension—with a single exception, all over 40 years of age. I have examined and taken the blood pressure of every patient several times. I have examined and prescribed for the most of them at intervals over a period of several years. The blood pressure ranges have been from 170 to 280/100 to 150.

There are 65 white and 36 colored. The age groups are as follows: one, 30-40; 15, 40-50; 28, 50-60; 38, 60-70; 14, 70-80; and five over 80. Twelve of these have had at least one bout of congestive failure requiring morphine and digitalis. Twenty-four have been put on a regimen of unrestricted exercise and diet. Percussion has indicated cardiac hypertrophy in more than 50 per cent, and the point of maximum impulse was displaced in each of these cases. It has not been practicable to confirm the physical findings of heart enlargement by an x-ray examination.

It is realized that an electrocardiogram is not of the first importance in diagnosing cardiac changes due to hypertension. However, I made electrographic tracings on 40 cases. Twenty of these revealed from light to conspicuous left axis-deviation, confirming the physical findings of hypertrophy in those cases. None showed right axis-deviation. One case showed left bundle-branch block, and one intra-ventricular block. No evidence of fibrillation was found in any of the grams. Three cases of acute coronary occlusion, two anterior and one posterior, were found in three cases under treatment.

I have used the generally accepted therapies—bromides, phenobarbital and nembutal; the various nitrites; iodides and theobromine; and sodium thiocyanate, in the form of the elixir of sodium sulfocyanate. In addition, were advised—rest, relaxation, vacations, weight reduction for the obese, a low-protein diet, vitamins and nicotinic acid. By far the best results have followed the administration of thiocyanate. The results from the more commonly used medications were unsatisfactory.

I have not recommended splanchnic nerve section nor vascular implantation to the kidney in any case. A series[14] of these operations have been done, and enthusiastically reported. These procedures, however, appear to be in the experimental state. Several experiments[15] have been made with renal extracts, both in animals and man, to reduce hypertension. These are also in the experimental stage and I have not used them.

Many studies[16-17-18] have been made in the treatment of hypertension with thiocyanate and generally good results have been reported. The dose recommended is not more than 5 grains a day. It is also recommended that the blood concentration should be from 8 to 12 mgs. per 100 c.c., and that frequently tests should be made that it may not exceed 12 mgs. It is urged that medication be stopped immediately if weakness, nausea, dizziness, or diarrhea appear.

I have given the elixir of sodium sulfocyanate in the recommended dose to 16 in the series of 100 cases of hypertensive arterial disease. Blood concentrations varied from 2 to 18 mgs. per 100 c.c. The results were good in 11 cases. Both the systolic and diastolic pressures were appreciably lowered in these cases, and the patients reported marked improvement in their sense of well-being. Three patients reported no improvement, and their blood pressures were not lowered. Toxic reactions occurred in two instances, in one case as a gastric upset with anorexia and nausea, and the drug was discontinued; in the other as a severe chill, followed by a high spiking temperature and erythematous rash all over the body, twenty-four hours after a venapuncture. The blood concentration was 6 mgs. per 100 c.c. in this case. It was feared that a streptococcic septicemia was contracted from the venapuncture; accordingly, maximum doses of sulfanilamide were given daily. In the meantime, a blood culture and daily blood and urine examinations were made. The patient was ill for ten days. The culture was negative for any blood-stream infection. Also the non-protein nitrogen of the blood was normal, and the red and white cell counts near normal notwithstanding the high temperature over so many days and the large and continuous doses of sulfanilamide. As far as I know, no similar reaction has been reported. This case further emphasizes the need of caution in giving this drug.

Two typical cases are described in brief outline:

A white woman, aged 48, with the usual symptoms of hypertension, had visited several clinics and had been told she had malignant hypertension. The blood pressure reading, on her initial visit the early part of 1942, was 250/120, and she was put on the regular dose of elixir of sodium sulfocyanate. Except for a few weeks, when a mild gastric upset ap-

peared, she had taken the drug daily, and has reported a steady improvement in well-being. She is now free of symptoms, drives her car and travels at will. There has been a consistent fall in blood pressure and on her last visit to my office it was 178/90.

A white farmer had dyspnea, vertigo and headache in varying degrees for several years, for which he had not sought medical advice. A mild attack of pulmonary edema in January, 1942, necessitated medical treatment. When first examined, the blood pressure was 220/120. Given the elixir of sodium sulfocyanate, the blood concentration reached 18 mgs. per 100 c.c. However, no toxic reactions appeared and a general improvement in well-being has been reported, while the blood pressure readings have steadily dropped. The blood pressure on his last visit to my office was 170/100.

This is not a large number of cases, and we all know that many factors make blood pressure go up and down. However, the response to thiocyanate in the eleven cases has been so good that the result is believed to be more than coincidental. However, it must be recognized that it is not likely that any treatment will effect a reversal of the hypertensive arterial disease, which, it seems, precedes the devolopment of hypertension. This being the case, treatment must be preventive, and of the young. Palliation is the best that can be done for the middle-aged and old. For the time being, I believe the thiocyanate is the drug of choice and reasonably safe if the medication is carefully supervised.

SUMMARY

Hypertensive arterial disease, occurring as it does in all age groups and particularly in those past forty, merits our best study. Its etiology is complex, and the anatomic changes within the arterioles responsible for hypertension take place slowly over varying lengths of time. Although many animal experiments have been done, and their counterparts seen in man—demonstrating renal disease to be a definite cause of hypertensive arterial disease—many do not accept renal morbidity as an etiological factor.

A study of the incidence of hypertension, or hypertensive arterial disease, reveals it to be present to a considerable degree among adolescents, and occasionally pre-hypertensive is demonstrable in young children.

In a study of 82 cardiac deaths, hypertensive arterial disease was found to be the underlying cause of myocardial failure in more than 40 per cent of the cases.

A hundred cases of hypertensive arterial disease now under treatment are analyzed with reference to bouts of heart failure, cardiac hypertrophy and electrocardiographic changes.

The conservative method of treatment with sedatives, nitrites and iodides was followed with varying and, for the most part, unsatisfactory results in all but 16 of the series of cases. In these cases elixir of sodium sulfocyanate was given, and an excellent response as to well-being and lowered blood pressures resulted in eleven cases. No apparent improvement took place in three cases, and toxic reactions resulted in two cases, necessitating withdrawal of the drug.

Two cases are presented in brief outline.

Thiocyanate therapy appears to be the treatment of choice in hypertensive arterial disease. Its administration needs careful supervision. It is recognized, however, that a reversal of the process of thickening of the arterioles is unlikely. Treatment must, therefore, be preventive when possible and palliative after the disease has manifested itself.

REFERENCES

1. White, Paul D.: Heart Disease a World Problem. *Bulletin of the New York Academy of Medicine,* 1940, second series, Vol. 16, No. 7, pp. 431-452.
2. Bright, Richard: Cases and Observations, Illustrative of Renal Disease Accompanied with the Secretions of Albuminous Urine, Guy's Hosp. Rep., 1: 338, 1836.
3. Fishberg, A. M.: Hypertension and Nephritis, Ed. 3, Philadelphia, Lea and Febiger, 1934.
4. Goldblatt, Harry, Lynch, James, Hanzal, R. F., and Summerville, W. W.: Studies on Experimental Hypertension: 1. The Production of Persistent Elevation of Systolic Blood Pressure by Means of Renal Ischemia, *J. Exper. Med.,* 59; 347 (March), 1934. Goldblatt, Harry; Lynch, James; Hanzal, R. F., and Summerville, W. W.: Experimental Hypertension Due to Renal Ischemia, *Bull. of Cleveland Acad. Med.,* 16: 6, 1932.
5. Page, Irvine H.: The Production of Persistent Arterial Hypertension by Cellophane Perinephritis. *J.A.M.A.,* 113, 23, pp. 2046-2048 (December 2), 1939.
6. Farrell, James T., and Young, Richard H.: Hypertension Caused by Unilateral Renal Compression, *J.A.M.A.,* 118, 9, pp. 711-712 (February 28), 1942.
7. Weiss, Soma, and Parker, Frederick, Jr.: Relation of Pyelonephritis and Other Urinary Tract Infections to Arterial Hypertension. *New Eng. Journal*

XUM

of Medicine, Vol. 223, No. 24 (December 12), 1940.

8. Barker, Nelson W., and Walters, Waltman: Hypertension and Chronic Atrophic Pyelonephritis Results of Nephrectomy. *J.A.M.A.,* 115, No. 11, pp. 912-916 (September 14), 1940.
9. Freeman, Gustave, and Hartley, George, Jr.: Hypertension in a Patient with a Solitary Ischemic Kidney. *J.A.M.A.,* 111, No. 13, pp. 1159-1161 (September 24), 1938.
10. Hines, Edgar A., Jr.: Reactions of the Blood Pressure of 400 School Children to a Standard Stimulus. *J.A.M.A.,* 108; No. 15, pp. 1249-1250 (April 10), 1937.
11. Hines, Edgar A., Jr.: Range of Normal Blood Pressure and Subsequent Development of Hypertension. *J.A.M.A.,* Vol. 115, No. 4, pp. 271-274 (July 27), 1940.
12. Alvarez, W. C., Wulzen, R., and Mahoney, L. J.: *Arch. Int. Med.,* 32: 17 (July), 1923.
13. Palmer, R. S.: The Significance of Essential Hypertension in Young Male Adults, *J.A.M.A.,* 94, pp. 694-697 (March 8), 1930.
14. De Takats, Geza, Heyer, Howard E., and Keeton, Robert W.: The Surgical Approach to Hypertension. *J.A.M.A.,* 118: 7, pp. 501-507 (February 14), 1942.
15. Grollman, Arthur, Williams, J. R., Jr., and Harrison, T. R.: Reduction of Elevated Blood Pressure by Administration of Renal Extracts. *J.A.M.A.,* 115: 14, pp. 1169-1176 (October 5), 1940.
16. Barker, M. Herbert: The Blood Cyanates in the Treatment of Hypertension. *J.A.M.A.,* 106, No. 10, pp. 762-767 (March 7), 1936.
17. Robinson, Roger W., and O'Hare, James P.: Further Experiences with Potassium Sulfocyanate Therapy in Hypertension. *New Eng. J. M.,* 221: 25, pp. 964-969 (December 21), 1939.
18. Griffith, J. Q., Jr., Lendauer, Roberts E., and Rutherford, R. B.: Studies of Criteria for Classification of Arterial Hypertension Treatment with Thiocyanate. *A. H. J.,* 21, No. 1, pp. 90-93 (January), 1941.

5701 Grove Avenue.

DISCUSSION

DR. J. M. HUTCHESON, Richmond: As Dr. Copley has indicated, interest of a scientific nature in hypertension has concerned itself chiefly with etiology. And, as that problem has not been settled, it is to be expected that wide diversity of opinion should exist as to treatment.

For more than a century the relationship of hypertension to renal disease has been a central point of discussion. Bright believed the cardiac hypertrophy and arterial changes found at autopsy to be due to increased resistance to peripheral blood flow caused by disease of the kidney. Some forty years later, Gull and Sutton, finding that so many hypertensive patients died of cardiac or cerebral disease and failed to show significant changes in the kidneys, concluded that sclerosis of the arteries is the primary factor. Still later, Allbutt and others, emphasizing the fact that hypertension precedes vascular changes, persuaded a large following that vaso-constriction is the initial event, to be followed later by sclerosis. As the sphygmomanometer came into general use and as facilities for determining renal function were at hand to show that, even with severe hypertension, kidney function may be normal, Allbutt's view was generally accepted and prevailed up to a few years ago. Following the work of Goldblatt and others on experimental hypertension, the kidney has again come into prominence. Today it is widely held that hypertension begins with sclerosis of renal arterioles and arteries and that renal ischemia thus produced causes the kidney to elaborate a substance which, when activated in the blood, brings about vaso-constriction. Thus the views previously mentioned are in a measure correlated. Whether this is the final explanation of hypertension or not cannot as yet be stated, but it is certain that the work of recent years has added immeasurably to our knowledge of the condition.

As to treatment, I am convinced that more can be accomplished by trying to help the patient live with his hypertension than by attempting to correct it. In the first place, I doubt the wisdom of reducing the pressure in all cases, even if it can be accomplished. Nor has it been my experience, as so many have implied, that unpleasant symptoms increase or diminish with the level of the pressure. On the contrary, many patients feel better as the pressure goes up and worse as it comes down. Much harm may be done by taking a patient's blood pressure and informing him, either directly or by implication, that unless his pressure is reduced he is headed for disaster or that any unusual effort may cause apoplexy. To say the right thing to patients is the art of medicine and no general rules can be laid down, but it is my belief that the less said about the height of the pressure the better. Sedatives like phenobarbital or chloral hydrate help the patient, though they probably do not affect his pressure. I have had no personal experience with thiocyanates, though I have seen patients taking the drug prescribed by others with variable success. Articles in the recent literature suggest that thiocyanate therapy is gaining in popularity, though the toxic effects deter many from even trying it.

What has been said is believed to apply to the great majority of cases of hypertension. There are exceptions, as in the rare instances of hypertension caused by unilateral renal disease. Sympathectomy, of one of the various types, may be of some use, but it is hardly conceivable that so radical a procedure should be applicable in more than a small number of cases. While differences of opinion as to treatment of hypertension are inevitable, it is my belief that in our present state of knowledge we could improve our effectiveness by devoting more attention to the patient himself and less to the height of his blood pressure.

DR. CLAUDE C. COLEMAN, Richmond: Dr. Copley has made sufficient reference to the surgical treatment of hypertension to justify my attempting some further discussion of this type of treatment. Dr. Hutcheson, who led

the discussion, made some reference to surgical treatment but he did not appear to favor it. I have great respect for Dr. Hutcheson's medical knowledge and judgment, based on observation of his work for many years. However, the attitude toward surgical treatment of intractable hypertension is very favorable in many medical centers, particularly those of Boston and the University of Michigan. I understand that operation in proper cases is enthusiastically advocated by the internists as well as the surgeons in these centers.

I, myself, have done splanchnicectomy with excellent results in some cases. In none of the cases referred to me for splanchnicectomy had any form of medical treatment shown any beneficial effect upon the condition. I have heard of no medical treatment which offers the patient with essential hypertension any particular relief, nor any single treatment upon which medical men agree as being helpful. I believe that surgery for this condition, which is often steadily progressive, offers the patient the only hope in many cases. This is particularly true of young people who maintain a high blood pressure level. In such cases it would seem important to lower the blood pressure by splanchnicectomy before destructive changes have taken place in important organs.

DR. COPLEY, closing the discussion: The opinions of Drs. Hutcheson and Coleman have always commanded my utmost respect, and I appreciate immensely their discussions of my paper. As teachers, both inspired me when a student and an intern. I remember well how they challenged by diagnosis and treatment of cases. A ward round with either one was a stimulating occasion, and always sent me hurrying to the library to find support in the literature for my mutilated contention in some particular case. I am very happy they have treated me so kindly on this occasion and have not annihilated all my conclusions.

I agree with Dr. Hutcheson the patient needs treatment, but differ with him and believe his hypertension needs treatment also. Each patient needs general treatment, no matter what his disease. The varied therapy from psychology to garlic is likewise striking evidence that treatment of hypertensive arterial disease has been unsatisfactory. It is also true the solution of the problem that will apply even to a majority of cases does not appear in sight. However, as I tried to point out, some of the conservative internists in various clinics believe sulfocyanate therapy to be of definite value in many cases. While my series is small, the results are in line with those of other investigators, and I think justify further trial. I am continuing the therapy and hope at a later time I shall have a much larger series of cases to report. As Dr. Hutcheson states, the toxic effect of sulfocyanate in some cases deters many from using it. The fact that toxic reactions do occur is its chief objection. The drug should be administered, therefore, with the greatest care and blood concentration tests should be frequently made. I also think harm results from making patients blood pressure conscious. On the other hand, I still believe a careful blood pressure reading one of the most important parts of a physical examination.

Dr. Coleman is correct in saying some of the internists and surgeons enthusiastically recommend splanchnicectomy. De Takats and his associates, of Chicago, think this the best method and are of the opinion of Dr. Coleman that surgery offers the patient the only hope in many cases. I also understand the operation has been successfully performed at the University of Michigan. As a rule, however, I do not think the internists of Boston are very enthusiastic over anything. I have taken courses at the Massachusetts General Hospital during the past few years, and that was my impression of them. While mention was made of the operation, I did not happen to contact those committed to it. Dr. Coleman's recommendation, however, unquestionably increases my confidence in this method, so that now I would not hesitate to suggest it.

INTRA-GROUP INCOMPATIBILITIES IN WHOLE BLOOD TRANSFUSIONS*

RALPH B. HOULIHAN, PH.D.,
Department of Preventive Medicine and Bacteriology,
University of Virginia, School of Medicine,
Charlottesville, Virginia.

Hemolytic transfusion reactions are becoming increasingly noticeable since the use of whole blood transfusions for therapeutic purposes has reached such large scale proportions. The majority of these reactions are probably due to: (a) *inter-* group errors in typing, (b) allergies, (c) foreign matter derived from the apparatus, (d) incipient coagulative changes. However, an appreciable number of these reactions are caused by *intra-* group incompatibilities. Investigations, particularly by Wiener,[1-6] of the reasons for the discrepancies existing in bloods of the same group have revealed that the antigenic structure of human blood cells and serum is much more complex than has been realized.

The purpose of this investigation was to attempt to determine whether or not the present methods of *intra-* group diagnosis are adaptable to routine use in the University Hospital Blood Bank.‡ Since

*Read before the Fall meeting of the Virginia Branch of the Society of American Bacteriologists at Richmond, November 14, 1942.

‡The author wishes to express his appreciation to Mrs. Edwin Shearburn of the University Hospital Blood Bank for her cooperation in making this study possible.

methods of subtyping and subgrouping are based on recent immunologic findings, the new constituents of whole blood are discussed in some detail. The present conception of the antigenic structure of human blood is presented in Table I.

SUBGROUPING

I. *Immunologic Considerations:*

Table I shows that Group A has been divided into subgroups A_1, A_2, and A_3, and similarly Group AB has been subgrouped into A_1B, A_2B, and A_3B.[2] Iso-agglutinins may occasionally be present in the sera of these subgroups, so that bloods with the following antigenic formula may be encountered: $A_1\beta a_2$, A_1Ba_2, $A_2\beta a_1$, A_2Ba_1, A_3a_1. Although A_1 and A_1B occur more frequently than A_2 and A_2B, iso-agglutinin a_1 is much more frequent than a_2. Since subgroups A_3 and A_3B are found rarely and merit further study, they will be disregarded in the present discussion.

II. *Role in Transfusion Reactions.*

Fortunately the irregular iso-agglutinins a_1 and a_2 either are entirely lacking in the majority of Groups A and AB, or are present in low titer. Nevertheless, it is necessary to remember that these iso-agglutinins may be evoked or augmented by iso-immunization, particularly in patients receiving multiple transfusions. For example, Wiener[2] has discovered transfusion reactions which have occurred in persons of subgroup A_2 who have received transfusions with A_1 bloods. The titer of the a_1 iso-agglutinin in these recipients was elevated sufficiently so that subsequent transfusions of A_1 blood caused a hemolytic reaction. Only one case of a critical rise in the titer of a_2 has been reported.[6] One patient in the University Hospital of subgroup A_1 had received multiple transfusions and suffered a transfusion reaction. The sera of this patient contained an irregular iso-agglutinin which was detectable at 4°C. This agglutinin clumped cells of Group 0 and A_2. The patient was Rh positive. The properties of this irregular iso-agglutinin are peculiar to iso-agglutinin a_2.

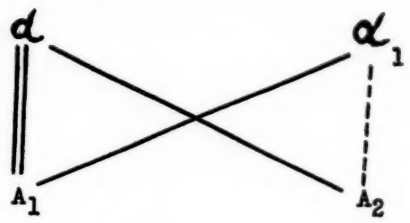

Fig. 1. The affinity of iso-agglutinins of B sera for iso-agglutinogens of cells of subgroups A_1 and A_2.
═══ indicates strong affinity;
——— moderate affinity;
----- weak affinity.

In summary, transfusion reactions due to the incompatibility of sub-groups are uncommon for the following reasons:

(a) The majority of the bloods of groups A and

TABLE I
ANTIGENIC STRUCTURE OF HUMAN BLOOD
SUB GROUPS*

Agglutinogens	O	A_1	A_2	A_3	B	A_1B	A_2B	A_3B
Frequency %	41.5	35.6	10.8	0.1	8.2	2.6	1.3	0.1
Agglutinins	$a\beta$	$\beta(a_2)$‡	$\beta(a_1)$	$\beta(a_1)$	a, a_1	(a_2)	(a_1)	?
Frequency %	100	(a_2) rare	(a_1) low	(a_1) rare	(a_1) 72	low	33	?

*Data of Wellisch and Thomsen.
‡Irregular iso-agglutinins are in parenthesis.

SUB TYPES

Agglutinogens	M	N	MN	Rh+	Rh—	Hr+	Hr—	P
Frequency %	30	20	50	87	13	?	?	0.1
Agglutinins	anti-M	anti-N	anti-MN	anti-Rh	anti-Rh	anti-Hr	anti-Hr	anti-P
Frequency	3 cases	0	0	0	*	0	?	2 cases

*Potential anti-Rh

AB do not contain these irregular iso-agglutinins.

(b) These irregular iso-agglutinins are usually very weak.

(c) The distribution of the subgroups (Table I) lessens the probability of subgrouping incompatibility in primary transfusions.

At the present time our Blood Bank is equipped to perform subgroupings when *intra-* group incompatibility is encountered. It should be mentioned that only potent B sera is used for grouping. Hooker[7] states that the commonest error in grouping is the failure to recognize persons of subgroups A_2 and A_2B because of the low agglutinability of A_2 cells; thus these groups might be interpreted as 0 and B, respectively, if weak group B sera were used.

III. *Method of Subgrouping.*

Approximately 72 per cent of the sera of Group B possess an a_1 iso-agglutinin in addition to the common a iso-agglutinin. The relative avidities of these iso-agglutinins for agglutinogens A_1 and A_2 as described by Friedenreich[8] are shown in figure 1. Absorption of suitable group B sera with A_2 cells removes the a iso-agglutinin, leaving a_1, which has very little affinity for A_2 cells. Cells which are agglutinated by the absorbed sera are A_1 cells; cells not agglutinating are A_2 cells (rarely A_3).

The routine open-slide procedure for typing blood is used. One drop of a standard cell suspension (2 per cent) is mixed with one large drop of absorbed B sera on a slide and rotated for 5 minutes. The agglutination is read macroscopically.

Absorbed B sera for the detection of subgroups can be obtained from commercial blood donor agencies; however, it can be easily prepared with a little practice.[9] Table II illustrates a typical protocol of our preparation of subgrouping sera. Group B serum was absorbed with ⅛ volume of packed cells from ten different persons of Group A. Cells No. 1 and No. 6 which reacted weakly with the unabsorbed serum were suspected of being A_2. The serum which had been absorbed with cells No. 1 and No. 6 still reacted with cells No. 2, 3, 4, 5, 7, 8, 9, and 10; thus cells No. 1 and No. 6 were A_2 since they had removed only the a iso-agglutinin, whereas the other cells had removed both a and a_1 and therefore were A_1. Concerning the amount of A_2 cells used for absorption, we found, in agreement with Friedenreich,[9] that an excess of A_2 cells weakens the reaction of the absorbed sera for A_1 cells; on the other hand, a minimal amount of A_2 cells fails

TABLE II
PREPARATION OF SUB GROUPING SERA

B serum absorbed with cells number	Absorbed sera vs. cells number									
	1	2	3	4	5	6	7	8	9	10
1	0	+	+	+	+	0	+	+	+	+
2	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0
6	0	+	+	+	+	0	+	+	+	+
7	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0

TABLE III
ABSORPTION OF B SERUM WITH VARYING VOLUMES OF A_2 CELLS

Group B serum	Blood Cells	Dilutions of serum (No. 1879)					
		½	¼	⅛	1/16	1/32	1/64
Unabsorbed serum	A_2	3+	2+	2-1+	1+	tr.*	0
	A_1	4+	4+	3+	2+	1+	±
Absorbed with equal volume	A_2	0	0	0	0	0	0
	A_1	3+	2+	x‡	x	x	x
Absorbed with ½ volume	A_2	0	0	0	0	0	0
	A_1	4+	2+	1+	0	0	0
Absorbed with ¼ volume	A_2	tr.	tr.	0	0	0	0
	A_1	4+	2+	1+	±	tr.	0
Absorbed with ⅛ volume	A_2	±	±	0	0	0	0
	A_1	4+	4-3+	2+	1+	±	0
Absorbed with 1/16 volume	A_2	±	±	tr.	0	0	0
	A_1	4+	3+	2+	1+	±	0

* tr. = trace visible microscopically.
‡ x = not done.

to remove the reaction for A_2 cells (Table III). Our data also indicate that B sera of a medium titer should be used. In very high titer B sera, such as that of Bever, it is difficult to remove the reaction for A_2 cells and weak sera such as No. 1821 do not react with A_1 cells after absorption. (Table IV.)

RH SUBTYPING

I. *Immunologic Considerations.*

In 1940 Landsteiner and Wiener[4] discovered an additional iso-agglutinogen in man. The sera of rabbits immunized with the red cells of the *Macacus rhesus* agglutinated the cells of approximately 85 per cent of a large series of normal persons. The antigen responsible for this agglutination was named the Rh (rhesus) antigen. Rh agglutinins are not normally present in the serum, but many Rh negative persons possess the ability to develop these antibodies when the Rh antigen is introduced either by transfusion of Rh positive persons, or through the placenta of an Rh positive fetus. Levine, Katzin, and Burnham[10] were the first to postulate iso-immunization with the Rh antigen as the cause of erythroblastosis fetalis, that is, the Rh positive fetus immunizes the Rh negative female, and the diffusion of the Rh agglutinins through the placenta destroys the cells of the fetus. The Rh antigen, unlike A and B antigens, is present in the cells only.

Diagnostic sera have been prepared by Wiener[5] by injecting guinea pigs with the red cells of Macacus rhesus; however, not all guinea pigs produced suitable serum. We have immunized guinea pigs with Macacus rhesus cells in an attempt to prepare diagnostic serum, but in the process of absorbing out agglutinins other than Rh became more concerned with the antigenic structure of normal guinea pigs cells and sera. Recently, it has been shown by Davidsohn[11] that the Rh antigens of man and monkey are similar, but not identical, and that the Rh antigen in man is complex and can be subdivided into Rh_1, Rh_2, Rh_3. However, Davidsohn states that a strong human anti-Rh serum will detect most of the Rh antigens. A very good source of primary Rh agglutinins is the sera of mothers recently bearing erythroblastotic infants. The Rh agglutinins disappear very rapidly *in vitro* and *in vivo* so that such sera should be used within a month after collection.

TABLE IV
ABSORPTION OF B SERA WITH A_2 CELLS*

Unabsorbed sera	A_2 Cells (Sn) Dilutions of sera						A_1 Cells (#1911) Dilutions of sera					
	½	¼	⅛	1/16	1/32	1/64	½	¼	⅛	1/16	1/32	1/64
#1954	3+	3+	2+	2+	±	±	4+	3+	3+	2+	±	±
#1821	3+	3+	2+	1+	tr.	—	3+	3+	2+	1+	±	tr.
#1892	3+	3±	2+	2+	2-1	1+	4+	4+	3+	2+	2+	1+
#1903	3-2+	3+	n.d.				3+	4+	n.d.			
Type	3-2+	2+	2-1+	1+	±	±	2+	2+	2+	2-1+	1+	1+
Bever.	4+	4+	4+	4+	4+	4+‡	4+	4+	4+	4+	4+	3-2+
#1968	4+	3+	2+	2-1+	1+	±	4+	3+	2+	2-1+	1+	±
Absorbed sera												
#1954	±	tr.	0	0	0	0	3+	2+	1+	±	tr.	
#1821	tr.	tr.	0	0	0	0	2+	1+	±	tr.	tr.	
#1892	1+	tr.	0	0	0	0	4-3+	3+	2+	1+	1+	
#1903	tr.	0	0	0	0	0	4+	3+	n.d.			
Type	±	tr.	0	0	0	0	3+	3+	2+	1+	tr.	
Bever.	3+	2+	1+	tr.	tr.	tr.	4+	4+	3+	2+	2+	
#1968	1+	±	tr.	0	0	0	3+	1+	±	tr.	tr.	

* ⅓ volume used.
‡ 1+ titer = 1/1024.

II. *Role of Rh Factor in Transfusion Reactions.*

The majority of *intra-* group transfusion reactions, some fatal, are due to Rh incompatibility.[3] For this reason, in spite of the complexity of the Rh antigen, every effort should be made to use the tests at our disposal in order to detect and prevent

reactions due to Rh discrepancies. Some of our laboratory personnel, students, and donors have been investigated in respect to the Rh antigen.* Approximately 85 per cent of this group were found to be Rh positive. At the present time the blood of patients with suspicious histories, i.e., irregular obstetrical history, children with erythroblastosis fetalis, occurrence of reactions during multiple transfusions, is sent to the Blood Bank Technician a short time before the transfusion is scheduled. Using the technic described below, the patient's blood is cross-matched with the prospective donors in order to detect irregular iso-agglutinins. In the event of an *intra-* group incompatibility, the sera of the patient is checked, as far as is possible, with Rh positive and negative bloods of the same group, and every attempt is made to supply Rh negative bloods in those cases where it is indicated.

III. *Methods of Subtyping.*

In order to detect the Rh agglutinin which is very weak, it is necessary to use a more delicate test than those used routinely.

The Rh agglutinin is usually so weak (which is surprising, considering the severity of the reactions) that it cannot be detected by the open-slide method. The tube method of Landsteiner and Wiener[5] has proved satisfactory for our determinations of such low-titering agglutinins. One drop of the cell suspension is mixed with one drop of inactivated anti-Rh serum in small tubes. The tubes are incubated for one hour at room temperature if guinea pig sera is used, or at room and ice-box temperatures if human serum is being used. A characteristic granular, dispersed sediment indicates agglutination; a negative sediment is perfectly spherical with an entire margin. The suspension is then shaken lightly and observed macroscopically. Finally, a drop of the suspension is examined microscopically. When the Rh positive and negative cells have been demonstrated, an irregular agglutinin in a patient's serum may be identified as anti-Rh by cross-testing with known Rh positive and negative cells of the same group. In the event that the Rh. antigen had not as yet been determined the sera could be set up against cells from ten different persons of the same group. Sera containing Rh agglutinins should agglutinate approximately 8 or 9 of these cell suspensions.

*These tests were carried out with sera obtained from the Certified Blood Donor Agency, Jamaica, New York.

ADDITIONAL SUBTYPES

Iso-antigens M and N are present in all blood groups, but because they are not iso-immunizing they are usually not considered in transfusion reactions.* However, the detection of these antigens‡ is of great value in: medico-legal studies, anthropological studies, research, and studies of the survival of incompatible cells in the patient. This last method, although used successfully by Wiener,[3] will probably not be used in Hospitals unless the laboratory has additional personnel for research purposes.

The Hr antigen does not seem to have been accepted entirely.[12] It has been used to explain rare *intra-* group reactions occurring when Rh positive persons have been transfused with Rh negative blood. Evidently Rh positive persons do not possess this antigen, whereas Rh negative persons do. Presumably all the comments made concerning the Rh factor can be repeated in a discussion of the Hr factor, at least as far as has been reported.

The P antigen has been reported in 2 cases to have been responsible for a reaction[1, 3]; but, again, the detection of this antigen is not a problem for the average Hospital laboratory.

SUMMARY

Hospital laboratories and blood banks which are concerned with the grouping of large numbers of bloods for transfusion purposes should attempt to prevent transfusion reactions caused by *intra-* group incompatibilities. While the infrequent occurrence of *intra-* group transfusion reactions caused by irregular subgroup agglutinins does not warrant their being used routinely for every transfusion, the tests are so simple that their use is indicated in certain cases, as follows: The detection of subgroups A_1 and A_2 should be performed routinely only in patients receiving multiple transfusions, and in whom incompatibility due to the Rh factor has been eliminated. Most of the *intra-* group reactions are due to Rh incompatibility. Every attempt should be made to employ the present methods for the detection of Rh agglutinogens and agglutinins. Serum containing Rh agglutinins can be obtained as described in the text, and used to detect the Rh antigen in donors and laboratory personnel. Using the cross-matching tube technic of Landsteiner and Wiener,

*Only 3 cases of anti-M have been reported and no cases of anti-N.

‡Immune rabbit sera is prepared by the injection of OM and ON cells, followed by careful absorptions. Very potent sera is available commercially.

XUM

Rh agglutinins can then be detected in the patients' serum. An attempt should be made to check, prior to transfusion, the Rh status of each patient who has had an irregular or pathologic obstetrical course, or whose history shows previous miscarriages or abortions of unexplained nature, or who has had previously infants showing erythroblastosis.

REFERENCES

1. Wiener, A. S., and Peters, H. R.: *Ann. Int. Med.*, 13, 2306, 1940.
2. Wiener, A. S.: *Jour. Imm.*, 41, 181, 1941.
3. Wiener, A. S.: *Amer. Jour. Clin. Path.*, 12, 189, 241, 302, 1942.
4. Landsteiner, K., and Wiener, A. S.: *Proc. Soc. Exper. Biol. and Med.*, 43, 223, 1940.
5. Landsteiner, K., and Wiener, A. S.: *Jour. Exp. Med.*, 74, 309, 1941.
6. Landsteiner, K., Levine, P., and Janes, M. L.: *Proc. Soc. Exper. Biol. and Med.*, 25, 672, 1928.
7. Hooker, S. B.: *New Eng. Jour. Med.*, 225, 871, 1941.
8. Freidenreich, V. *Zeitschr. f. Immunitäts.*, 71, 1, 1931.
9. Wiener, A. S.: *Amer. Jour. Clin. Path.*, 11, 45, 1941.
10. Levine, P., Katzin, E. M., and Burnham, L.: *Jour. Amer. M. Assoc.*, 116, 825, 1941.
11. Davidsohn, I., and Toharsky, B.: *Amer. Jour. Clin. Path.*, 12, 434, 1942.
12. Javert, C. T.: *Amer. Jour. Obst. and Gynec.*, 43, 921, 1942.

CASE REPORT OF TYPE 2 PNEUMONIA NOT RESPONSIVE TO SULFA PREPARATIONS

J. PAUL KENT, M.D.,
Altavista, Virginia.

I was first called to the home to see M. L. H., white male, age 39, on December 5, 1942, complaining of generalized aching especially in the back and extremities and a fever. On examination I found a well developed, well nourished white man lying in bed very restless and with a flushed face, temperature 104 degrees, pulse 100, respiration 26. The physical examination was negative except a red throat. A diagnosis of "flu" was made and treatment prescribed accordingly.

On my visit the next day, December 6, I found T. 103 degrees, P. 108, R. 36. There were some fine crepitant rales heard over the base of the right lung posteriorly, and a diagnosis of lobar pneumonia was made. Sulfathiazole in the usual dosage was prescribed along with general supportive treatment. The patient did not make any change except the temperature would drop to around 100 degrees at times but fluctuated to 103 degrees until on the evening of December 8, when he had a total of 30 seven and one-half grain tablets of sulfathiazole; this was discontinued, thinking the patient might have a virus pneumonia.

The next morning, December 9, showed the pneumonia had extended to the middle lobe, at which time he was started on sulfadiazine and this was continued through December 12, but the patient progressively grew worse and on the evening of December 11, I found the pneumonia had extended until the entire right lung was involved. It was decided to obtain a specimen of sputum for typing which was collected during the night of December 11, and sent to a Lynchburg hospital—this being the nearest hospital to Altavista for typing—on the morning of December 12, and was reported to be type 2 pneumococcus.

I decided to put the patient on specific serum and sent to Richmond (130 miles distance) for the serum. We obtained 100,000 units of type 2 (rabbit) anti-pneumococcic serum from the State Health Department.

On the afternoon of December 12, the patient began to have considerable difficulty in breathing and had a respiratory rate of 50. One ampule of coramine subcutaneously every four hours relieved the respiratory difficulty considerably and 1000 cc. of 10 per cent glucose in normal saline was given intravenously in preparation for the pneumonia serum, although the patient had been taking fluids exceptionally well throughout his entire illness. At 6:20 P. M., December 12, the patient was given 10 grains of aspirin and tested for sensitivity to serum. At 7 P. M. he was given 20,000 units of serum intravenously and forty-five minutes afterwards he had a thermal reaction with respiratory difficulty which was relieved by the usual nursing principles plus adrenalin and coramine by "hypo". At 9:30 P. M. he was given 10 grains of aspirin, and at 9:40 P. M. 40,000 units of serum intravenously, which was followed in about one hour by a

severe reaction; the pulse and respiratory rates were difficult to obtain, but this again was relieved by nursing principles—adrenalin and coramine. At midnight, T. was 101 degrees, P. 96, R. 38, and the patient's general appearance was better than it had been for three or four days. At 2 A. M., December 13, he was given 10 grains of aspirin, and at 2:30 A. M. another 40,000 units of serum intravenously. At 4 A. M., T. was 100 degrees, P. 88, R. 32; at 6 A. M., T. was 98, P. 84, R. 26, with a general marked improvement in the patient.

Through the day of December 13, his highest temperature was 101.6 degrees. From December 14, thirty-six hours after the institution of serum treatment, the patient did not run temperature above 99. 6 degrees but did continue to run a temperature around 99 degrees in the afternoons for about a week. There was a gradual resolution of the lung involvement requiring about ten days after the institution of serum and eighteen days after the onset of illness for complete resolution.

This patient ran a normal temperature from December 24, 1942, (19th day of illness) until January 3, 1943, when he suddenly began to run a temperature and showed signs of recurrent pneumonia. I checked him in my office January 1, finding his temperature normal and chest clear except for a pleural friction rub over the right base but he did not look well generally.

On January 4, 1943, I found him quite ill—T. 104 degrees, left pupil reacted sluggishly to light and physical signs of pneumonia in lower half of right lung. Hospitalization was advised, and the patient was carried to Medical College of Virginia Hospital, at Richmond, where he remained from January 4 to January 16, 1943, and was discharged with the diagnosis of atypical (virus) pneumonia, having recovered by lysis on the symptomatic treatment.

Conclusion: A patient with type 2 pneumonia which progressively grew worse with the extension of lung involvement while being treated with two different forms of sulfa preparations made a dramatic response to 100,000 units of type 2, antipneumococcic (rabbit) serum. This patient ten days later had recurrent pneumonia diagnosed as atypical (virus) pneumonia from which he recovered by lysis on symptomatic treatment.

SOCIAL FORCES COMPEL PROFESSIONAL PLANNING FOR MEDICAL ECONOMY*

FRANCIS I. LIBBY,
Secretary-Treasurer, Piedmont Hospital Service Association,
Lynchburg, Virginia.

Several factors evolving from the social and economic patterns of our present democratic philosophy make it imperative that the medical profession take immediate steps to safeguard its future. The situation is recognized and evaluated in a recent issue of the VIRGINIA MEDICAL MONTHLY. In the "guest editorial" of this publication for the month of January, 1943, A. M. Simons, the Assistant Director of Medical Economics of the American Medical Association, cogently states:

> "in the swiftly changing world today many roads are open but the one marked 'status quo' is closed. If the medical profession does not choose where it will go, less competent powers will choose for it."[1]

During the past several years, there has been evidence of a constantly increasing interest on the part of certain groups in "social insurance" designed to provide "a reasonable amount of security against the major hazards of life".[2] For our laboring classes, this conception of "social insurance" includes "(1) provisions for old age and for dependent survivors at death, (2) unemployment, and (3) health".[3]

While the problems resulting from old age, death and loss of employment by the wage earner have been partially solved by our present social security legislation, compulsory health insurance has received relatively little attention. This is probably due to the magnitude and complexity of the problems encountered in the development of the program.

Falk in "An Introduction to National Problems in Medical Care" observes that:

*Presented to the Lynchburg Academy of Medicine, Monday, March 1, 1943, as part of a report of the Committee on Prepaid Medical and/or Surgical Plan, Dr. James R. Gorman, Chairman.

"The costs of illness or medical needs are highly variable in their impacts upon family budgets and security. Small costs for medical care may be absorbed in the family budget which is above the bare subsistence level; but the occurrence of a 'high cost' illness, even when moderate fees are charged for each unit of service, may be a financial catastrophe for a family of small, modest or even substantial means.

"Illness and disability are not considerate of the family exchequer, and large costs may fall on small purses. The plain fact, well attested by numerous studies, is that families cannot, even if they would, budget against expenditures which come unexpectedly and which fluctuate within such broad ranges that they may exceed even annual income, and at the same time destroy earning power."[4]

Evidence of the fact that the costs of health services frequently constitute a major problem in family finance may be found in the number of bankruptcy petitions which list liabilities for hospital and professional services.

Of the thirteen pending "pauper" cases on file locally on February 10, 1943, every one, without exception, included amounts owed to at least one doctor or physician. One man listed nineteen, and another seventeen, different doctors to whom money was owed for services rendered. Nine of the cases had outstanding bills from five or more doctors, and in one instance, every listed "open account" was for medical, surgical or hospital service. In eight instances, unpaid hospital bills were listed. This, I understand, was not an unusual condition.

It might be argued that these individuals are indigents and that they expect any services rendered to them to be provided without charge. This, however, is not always the case.

For example, the person listing seventeen doctors to whom amounts were owed for professional services happens to be enrolled in the Piedmont Hospital Service Association. Two bills were paid for members of this man's family during the past few months. The fact that this individual has subscribed (and in time of financial stress, continues his membership) has not only assured the hospital of payment for services rendered, but also indicates a willingness to participate in, and an ability to maintain, some method of spreading the cost of service.

Without attempting to go into the question of the justification for these bankruptcies, which, of course, is impossible, the regularity with which doctor's bills appear in the statements would indicate that there is a pressing need for some solution to the problem of financing medical costs from the physician's as well as from the patient's point of view.

While it is debatable as to where the ultimate responsibility rests, it is nevertheless true that there is considerable agitation for some form of compulsory health insurance. Political and labor leaders are finding in this an opportunity of appealing to large numbers of workers who find it exceedingly difficult to meet the unpredictable expense coincident with illness.

Although little has actually been accomplished in securing the required legislation to initiate the program, several sporadic attempts have been made. Without going into detail, a review of some of the developments in the field of medical care during the past decade indicates activities that are growing progressively imminent. These include:

(1) The appointment in 1934 of the "Committee on Economic Security" which drafted the Social Security Bill. This draft, incidentally, was expected to include "health insurance" but opposition to this part of the program was sufficient to exclude it from the proposal which was finally presented to Congress.[5]

(2) Immediately after this Bill was passed, the "Interdepartmental Committee to Coordinate Health and Welfare Activities" was appointed by the President. A sub-committee called the "Technical Committee on Medical Care", continues the work begun in 1934 in connection with medical service. It was the reports of this latter committee entitled "The Need for a National Health Program" and "A National Health Program" which provided the impetus for the legislative proposals of Senator Wagner of New York.[6]

(3) After the introduction of the Wagner Bill, popularly known as the "National Health Bill", but which was actually a series of amendments to the Social Security Act, compulsory health bills were introduced in a "considerable number of states".[7] The fact that such influential States as California, New York and Wisconsin have considered laws for such purposes indicates that compulsory health plans have been seriously regarded in several sections of the country.

(4) The "Elliot Bill", introduced on September 9, 1942, and known as the "Federal Social Insur-

ance Contributions Act" (H.R. 7534), which came as a result of a request from a national labor group for the inclusion of temporary disability and hospitalization benefits in the present Social Security Law, failed to be reported out of the committee to which it was sent for consideration.

(5) On January 11, 1943, Senator Green of Rhode Island, introduced a bill "to amend and extend the provisions of the Social Security Act" (S. 281). Among the salient features of this proposal are:

(a) The extension of the provisions of the So-Social Security Law to include practically all employed persons now excluded in the program.

(b) The modification of the present provisions by defining "old age assistance" to include "payments necessary for medical services" for needy aged individuals.

(c) Hospitalization benefits for workers and their families patterned after the proposal set up in the "Elliot Bill". Briefly, this provides indemnification benefits for a minimum of 30 and a maximum of 60 days, with allowances ranging from $3.00 to $6.00 per diem, for which employer and employee will each contribute an amount equal to one-half (½) per cent of the workers' wages up to a maximum of $3,000.00 per year.

The status of this bill, which has been referred to the Senate Committee on Finance, is somewhat uncertain.[8] There is evidence, however, that other similar compulsory hospital insurance plans will be presented to the present session of Congress if the pending bill is not passed.[9] All indications point to a more determined effort on the part of the advocates of a more comprehensive social security program when the other attempts are made, and, obviously, compulsory medical care to be far removed from it in legislative proposals.

(6) The recent decision of the United States Supreme Court upholding a lower court's conviction of the American Medical Association and the District Medical Society for violation of the "Sherman Anti-Trust Act" may have far-reaching effects upon the attitude of the general public when legislation is proposed.

(7) The "Beveridge Report", recently published in England, revising and enlarging their present social security program, which already includes some provisions for "health insurance", may very likely encourage similar legislation in this country.[10]

There can be little doubt concerning the trend. Some method of financing and distributing the costs of medical care will unquestionably develop, either through a voluntary system, or by political compulsion.

It is interesting to note, in this connection, that the very agency which was formerly viewed with suspicion as the "Opening-wedge" for "socialized medicine", has not only ceased to be a threat in that direction, if it ever was such, but has now emerged as the most effective means of counteracting the trend toward governmentally controlled health services. I refer, of course, to the hospital service plans, which during their formative years were openly opposed by some members of the medical profession, and even now, are reluctantly tolerated as a "necessary evil" in many instances.

It now appears that through the formation of non-profit, professionally sponsored medical plans will come the answer to the problem of budgeting for medical care, and which at the same time, will enable the profession to maintain control of its own organization. Neither commercial insurance plans, whose fundamental purpose is "profit", nor compulsory politically controlled programs will accomplish this. In both cases, the reasons are obvious.

It would seem, then, that the opportunity is at hand for action by the profession in developing a program of health service which will preserve the traditional pattern of medicine and its correlated services. No other agency can solve the problem; it must come from the profession itself in order to be adequate and satisfactory. This is succinctly stated in the editorial quoted above

> "events . . . forecast extensive social changes when the eagerly awaited peace arrives. Medical arrangements will not be isolated from these changes, nor can organized medicine remain indifferent to them without risking the achievements of many centuries."[11]

BIBLIOGRAPHY

1. Simons, "Guest Editorial", VIRGINIA MEDICAL MONTHLY, January, 1943.
2. Hohaus, "Social Insurance in a Democracy", Address

XUM

to American Life Convention, October, 1942.
3. *Ibid.*
4. Falk, "An Introduction to National Problems in Medical Care, Law and Contemporary Problems—"Medical Care", Duke University 1939 (Vol. VI—No. 4).
5. Maslow, "Background of the Wagner National Health Bill", Law and Contemporary Problems.
6. *Ibid.*
7. Reed, "Legislative Proposals for Compulsory Health Insurance", Law and Contemporary Problems.
8. Rorem, General Letter No. 330, February 20, 1943, "Social Security Trends and Prospects".
9. Editorial, "A Plan for Wider Social Security", Hospitals, January, 1943—Vol. 17—No. 1.
10. Pink, "Sir William Beveridge in the United States", Address delivered February 16, 1943, before Kings County Medical Society.
11. Simons, "Guest Editorial", VIRGINIA MEDICAL MONTHLY, January, 1943.

CASE REPORT OF MATERNAL DEATH

MATERNAL HEALTH COMMITTEE
MEDICAL SOCIETY OF VIRGINIA

The patient, an 18 year old primipara, registered in the clinic on June 12, 1941, at which time she was about seven months pregnant. She was very obese, blood pressure 110/75 and a trace of albumin in the urine. She returned every two weeks for prenatal care and on July 17th her blood pressure was 130/90. There was one plus albumin in the urine and she had gained six pounds in weight. On July 23rd a physician was called to her home on account of convulsions, blood pressure 164/122. She was given morphine grains 1/6 and 2 cc. of 50 per cent solution of magnesium sulfate intramuscularly and referred to the hospital.

Patient was admitted to the hospital at 11:45 A. M. on July 23, 1941, with a history of having had two convulsions the night before admission and one convulsion on the day of admission. She had had edema of the feet and legs for a month. On admission she was mentally clear, blood pressure 160/110, Wassermann negative, R.B.C. 4,100,000, hemoglobin 75 per cent, and W.B.C. 12,600. On July 25th, two days after admission, she was improved except for limited urinary output, the toxemia apparently being controlled, blood pressure 140/104. An attempt was made to induce labor on July 25th by manually dilating the cervix using a Hegar dilator, and inserting a No. 5 Voorhees bag. A two and one-half pound weight was then attached to the bag. Morphine grains 1/6, and Scopolamine grs. 1/200 were given before the operative procedure was started. The bag was removed from the vagina eight hours after its insertion. The membranes ruptured spontaneously and an arm prolapsed into the vagina. This was replaced and under Cyclopropane anaesthesia a tenaculum was attached to the baby's scalp. On the following day, July 26th, the blood pressure was 186/128. The patient had been semi-comatose since the administration of the anaesthesia. The head was high in the pelvis. There had been almost complete anuria for the past twenty-four hours. At this time, after consultation it was decided to treat the toxemia and make no further attempts at delivery. Although she had never been in labor it was decided, eighteen hours later, on July 27th, to attempt delivery as a last resort, after 1/100 grs. of Scopolamine was given. The vertex was above the spines and there was a thin but firm rim of cervix present. To avoid lacerating the cervix a craniotomy was done. Her condition remained poor following delivery, coma persisting, and she died three hours later. During her stay in the hospital she was given either 300 cc. of 25 per cent glucose or 200 cc. of 50 per cent glucose daily for anuria. She also received 20cc. of 10 per cent solution Magnesium Sulfate intravenously on the 23rd, 24th, and twice on the 26th. Her temperature was 100 until the 25th and then remained between 101 and 103 being septic in character until she died.

COMMENT

This has been classified as a preventable death by the committee. Prenatal care was inadequate. This was a relatively mild case of eclampsia according to Eden's classification, and we believe should have recovered. She was recovering from the toxemia, the convulsions having been controlled and the blood pressure improved when operative inter-

ference was instituted. This case illustrates the importance of treating the disease, waiting to empty the uterus until the kidneys are functioning well. There seems to be no definite course of treatment in this case and no mention is made of the use of digitalis and oxygen, two recognized valuable aids in the treatment of this disease. The mortality from toxemia has been greatly reduced and no longer occupies first place in maternal mortality in the State of Virginia. This should and can be further improved by closer supervision of our cases and continued conservatism in treatment.

MENTAL HYGIENE NOTES

Annual Report.

The State Department of Mental Hygiene and Hospitals has just released the one hundred and sixty-ninth annual report of Virginia's efforts to care for and treat its mentally ill and mentally deficient.

Exclusive of the superintendents, there were twenty-one physicians in all the institutions as of June 30, 1942, to care for an average of 11,333 patients, which is a ratio of 1 to 564. This is a low from a high of twenty-six in the year ending June 30, 1940, with a ratio of 1 to 413.

There were 812 nurses and attendants with a ratio of 1 to 13.9 which compares with a high of the year previous of 862 and a ratio of 1 to 12.9.

One thousand two hundred and twenty employees of all types, or a ratio of 1 to 9.1, were on duty June 30, 1942, as compared with 1,296 and a ratio of 8.6 the year previous.

The report shows that progress was made in the nurse and attendant training program under the supervision of Mrs. Lela S. Anderson, R.N., and in the State-wide system of patient and employee libraries through the supervision of Miss Bess Paterson Walford. Occupational therapy also was extended to some extent at Eastern State Hospital and to a greater extent at Southwestern, both of which had graduate therapists. Central State Hospital continued its fine work as in the past under the direction of four trained therapists, but not graduates.

When the ratio of physicians to patients of 1 to 564 is compared with the American Psychiatric Association ratio of 1 to 150, and when the nurse and attendant ratio of 1 to 13.9 is compared with that of 1 to 8, one can readily imagine the difficulties Virginia's mental hospitals are encountering in the effort to properly care for and treat the 11,336 patients who were in the institutions on June 30, 1942.

Mental hygiene clinics were conducted on a part-time basis by Dr. Joseph E. Barrett in seven localities in southwestern Virginia and by physicians from the Central State Hospital at the Medical College of Virginia and at the hospital. A total of 401 patient visits were made to these clinics during the year by 247 patients. Two hundred and five persons were referred by health and welfare agencies, physicians, courts, and schools, and 70 other persons came regarding patients.

During the year 332 sterilizations were performed, making a total of 4,385 since the sterilization law become effective in 1924.

Overcrowding existed in three institutions, with 758 beyond capacity; Central with 535, Eastern 101, and Lynchburg State Colony 122.

Total land acreage all hospitals	6,843
Value of farm products produced	$ 269,152.27
Total value all property all institutions	10,653,616.24
Total expenditures for care and treatment of patients	2,281,191.20
Per capita cost Year $201.29 Day	.5515
Total capital outlay expenditure	129,040.95
Daily cost for food per person	.1941
Number patients resident in all institutions 6/30/42	11,336
Number on books but on parole or otherwise out	2,761
Total under care of institution 6/30/42	14,097

Submitted by

F. W. GWALTNEY,
Executive Secretary.

Public Health

I. C. RIGGIN, M.D.,
State Health Commissioner of Virginia

The report of the Bureau of Communicable Diseases of the State Department of Health for March, 1943, compared with the same month in 1942, and for the period of January through March, 1943, compared with the same period in 1942, follows:

	MAR. 1943	MAR. 1942	JAN.-MAR. 1943	JAN.-MAR. 1942
Typhoid and Paratyphoid Fever	8	4	36	42
Diarrhea and Dysentery	143	73	322	297
Measles	2,459	993	4,068	2,372
Scarlet Fever	203	141	612	491
Diphtheria	31	39	124	155
Poliomyelitis	2	1	10	1
Meningitis	141	21	390	52
Undulant Fever	0	4	6	6
Rocky Mountain Spotted Fever	0	0	0	1
Tularemia	3	4	22	18

THE PREVENTION OF WHOOPING COUGH

Rapidly accumulating evidence indicates that whooping cough must soon be included in the group of major infectious diseases which are practically controllable by the use of specific biological agents. The prophylactic value of pertussis vaccine in early childhood is already well established, and it is being used more and more widely for the immunization of children and of infants in the last half of the first year of life.

The effectiveness of this method of immunization has been inferred from abundant laboratory data, and has been well confirmed by clinical experience in large numbers of inoculated children with appropriate controls. Statistical evaluation of the incidence of whooping cough among immunized and unimmunized children under similar exposure to infection shows a highly significant difference in the two groups confirming the active immunization power of pertussis vaccine.

Protection by this means, however, has not been available for very young infants though they are highly susceptible to this severe and frequently fatal malady. Few infants inherit sufficient passive immunity to be detected even by the sensitive mouse protection test, and their ability to develop active immunity after the administration of pertussis vaccine is acquired very slowly.

A recent report of Cohen and Scadron[1] indicates that protection during early infancy may be attainable by inoculation of pregnant mothers with pertussis vaccine. At about the fifth or sixth month of pregnancy, these investigators administered the vaccine to mothers at intervals of two weeks with six doses totaling 150 billion organisms and found high antibody production. The last injection was given six or eight weeks before term. General reactions were few and mild, and local reactions were not serious though common. There were no discernible ill effects on pregnancy, on deliveries or on the babies. In each of 29 cases in which antibody production was measured by mouse protection tests, the protective titer was raised to a very high level and was almost quantitatively transmitted to the baby. Further studies are being made to ascertain the persistence of the antibodies and the relative incidence of pertussis in the babies of immunized mother and of unimmunized controls.

Continued research in this field is highly desirable in view of the high morbidity and mortality rates of whooping cough in infancy. If the procedure proves as effective and practicable as pertussis vaccination in late infancy and childhood, control of this major disease would seem assured. While awaiting final evaluation of this promising procedure, more extensive use should be made of the vaccine in children and infants mature enough to benefit from it.

1. Cohen, Philip and Scadron, S. J., *Placental Transmission of Protective Antibodies Against Whooping Cough by Innoculation of Pregnant Mother, J.A.M.A.*, February 27, 1943.

Miscellaneous

Distinguished Medical Officers Honored at Winter General Hospital, Topeka, Kansas

Winter General Hospital, Topeka, Kansas, is named for the late Brigadier-General Francis Anderson Winter, who was Surgeon of the Lines of Communication in France early in the First World War and later was our senior medical officer in Great Britain.

This institution has adopted the interesting plan of naming its important clinics, buildings and streets for distinguished deceased medical officers of the

Army who so far have never been honored by having their names given to buildings, general hospitals, or other entities of the Medical Department, U. S. Army. Winter General Hospital is the first of the Army's general hospitals to take this step.

The names are selected as appropriate for the particular clinic or building. The names of the streets are those of medical officers who have become the heads of other branches of the Army. In some instances Army posts have been named for these chiefs of other branches, but there has heretofore been no medical building or institution named for them.

The following are the names so far selected:

1. The Waterhouse Medical Clinic

Named for Surgeon Benjamin Waterhouse (1754-1846) of Massachusetts who introduced vaccination in America; first Professor of Medicine at Harvard.

2. The John Jones Surgical Clinic

Named for Surgeon John Jones (1729-1791) of New York who wrote the first American medical book, founded the New York Hospital; first professor of Surgery at King's College, now Columbia University.

3. The Northington Roentgenological Clinic

Named for Colonel Eugene Garland Northington (1880-1933) of Alabama, pioneer student of military roentgenology; lost both arms and finally his life from malignancy due to exposure to the rays before their danger was known to science.

4. The Rodriguez Dental Clinic

Named for Major Fernando Emilio Rodriguez (1888-1932) of Puerto Rico, who made the first studies of the bacteriology of dental caries.

5. The Keen Neurosurgical Clinic

Named for Major William Williams Keen (1837-1932) of Pennsylvania, pioneer student, with his colleagues, Acting Assistant Surgeons Silas Weir Mitchell and George Reed Morehouse, of gunshot wounds of nerves; one of the few medical officers who served in both the Civil and World Wars.

6. The Rush Neuropsychiatric Clinic

Named for Surgeon General Benjamin Rush (1745-1813) of Pennsylvania, author of the first American book on insanity, the only systematic American treatise on the subject before 1883; signer of the Declaration of Independence; founder of the University of Pennsylvania.

7. The Shippen Clinic for Women

Named for Director General William Shippen, Jr. (1736-1808) of Pennsylvania, first teacher of obstetrics in America; first professor of surgery in America, founder of the University of Pennsylvania.

8. The Woodward Laboratory

Named for Lieutenant-Colonel Joseph Janvier Woodward (1833-1884) of Pennsylvania, pioneer in photomicrography; eminent anthropologist; President of the American Medical Association.

9. The Fletcher Medical Library

Named for Colonel Robert Fletcher (1823-1912) of the District of Columbia, first Editor of the *Index Medicus;* eminent bibliographer and anthropologist.

10. The William Brown Pharmacy

Named for Physician General William Brown (1748-1792) of Virginia, author of the first American Pharmacopeia.

11. McGee Hall (Nurses Quarters)

Named for Contract Surgeon Anita Newcomb McGee, M.D., R.N., (1864-1940) of the District of Columbia, organizer of the Army Nurse Corps and leader in advancing the profession of nursing in America.

12. Boschen Hall (Enlisted Men's Recreation Building)

Named for Major-General Frederick Wegener Boschen (1876-1942) of New York, Hospital Steward who became Chief of Finance of the United States Army.

13. Leonard Wood Road

Named for Major-General Leonard Wood (1860-1927) of New Hampshire, who won the Medal of Honor for extreme gallantry as a medical officer, and who became Chief of Staff of the Army.

14. Ainsworth Road

Named for Major-General Fred Crayton Ainsworth (1852-1943) of Vermont, the medical officer who devised the Army's system of personnal records and who became Adjutant General of the Army.

15. Eustis Road

Named for Surgeon William Eustis (1753-1825) of Massachusetts who served as a medical officer during the Revolution and became Secretary of War in President Jefferson's cabinet; Member of Congress; Governor of Massachusetts.

16. McHenry Road

Named for Surgeon James McHenry (1753-1816) of Pennsylvania who served as a medical officer during the Revolution and became Secretary of War

XUM

in President Washington's and President Adams' cabinets; Member of Congress; Member of the Convention which framed the Constitution of the United States.

17. Myer Road

Named for Brigadier-General Albert James Myer (1828-1880) of New York, distinguished field surgeon and student of military communication systems; founder of the Signal Corps and first Chief Signal Officer of the Army; father of the Weather Bureau.

Woman's Auxiliary to the Medical Society of Virginia

President—MRS. H. W. ROGERS, Norfolk.
President-Elect—MRS. W. CLYDE WEST, Alexandria.
Recording Secretary—MRS. C. C. SMITH, Norfolk.
Corresponding Secretary—MRS. ALBERT G. HORTON, Norfolk.
Treasurer—MRS. REUBEN F. SIMMS, Richmond.
Chairman, Press and Publicity—MRS. C. E. ARNETTE, Alexandria.

The Norfolk Auxiliary

Had its annual luncheon in celebration of Doctors' Day on March 15th at Ames and Brownley's Tea Room. A brief business session preceded the luncheon. Mrs. C. C. Cooley and Mrs. Stark A. Sutton were made chairman and co-chairman of a committee to fill Ditty Bags for the Red Cross and a donation for this purpose was voted by the members.

Mrs. W. E. Butler, President, welcomed the guests and introduced Mrs. Richard Peake, chairman of Doctors' Day. On behalf of the Auxiliary, Mrs. Peake announced the gift to the Norfolk County Medical Society of a renewal subscription to "The Annals of Surgery". The main feature of this program was the presentation to the Norfolk County Medical Society of an Honor Roll of the members who are serving in the armed forces. The Honor Roll, draped with an American flag, was unveiled by Mrs. M. N. King who made the presentation. It contains 43 names of doctors who have become officers in the services, and space for more. Over all is the American eagle, and just below it, the doctor's insignia, the Caduceus, which had been owned and used by the late Dr. Peake. Mrs. King, in making the presentation, paid a tribute to the doctors serving here on the home front against tremendous odds in the crowded area as well as to those on the war fronts. She read the names on the Honor Roll and stated the branch of service in which they are serving.* The Honor Roll was accepted by Dr. A. Brownley Hodges, President of the Society.

Dr. Julian L. Rawls then gave a very interesting talk on "General Aspects of Cancer".

Guests at this meeting included Mrs. W. A. Porter and Mrs. H. L. King of the U. S. Marine Hospital and one new member, Mrs. Istram Gaspar.

MRS. BROCK D. JONES,
Chairman, Press and Publicity.

*These names have all been published in the MONTHLY in the list of Doctors in the Service.

Warwick County Auxiliary.

At the meeting on February 2nd, officers were elected as follows: President, Mrs. Paul Hogg; vice-president, Mrs. Barnes Gillespie; recording secretary, Mrs. E. W. Buckingham; corresponding secretary, Mrs. C. E. Holderby; treasurer, Mrs. Murray Dick; and historian, Mrs. H. W. Potter. Committees and their chairmen are: Pre-Natal, Mrs. T. C. Lawford; Membership, Mrs. J. C. Cutler, Publicity, Mrs. W. A. Mitchell; Linen, Mrs. W. R. Payne; *Hygeia* and Bulletin, Mrs. G. C. Amory; and Program, Mrs. Russell Buxton.

Petersburg.

At the March meeting of the Petersburg Auxiliary, Dr. Frank G. Sayers, pastor of the First Christian Church, spoke on Russia and gave an enlightening and interesting talk on that country, its government and its conditions.

Routine business was discussed and appreciation was expressed for the contributions made by members of the colored churches to the recent linen shower for the Petersburg Hospital.

$36.50 was contributed to the Memorial Bed Fund.

Mrs. Henry M. Snead is president of this Auxiliary.

Book Announcements

Books received for review are promptly acknowledged in this column. In most cases, reviews will be published shortly after the acknowledgment of

receipt. However, we assume no obligation in return for the courtesy of those sending us same.

The March of Medicine. The New York Academy of Medicine Lectures to the Laity, 1942. New York. Columbia University Press. 1943. xiv-217 pages. Cloth. Price $2.50.

The Inner Ear. Including Otoneurology, Otosurgery, and Problems in Modern Warfare. By JOHN FISHER, M.D., Staff Member, Beth Israel Hospital, Boston. And LOUIS E. WOLFSON, M.D., Instructor in Ear, Nose, and Throat, Tufts Medical School; Senior Surgeon in Ear, Nose, and Throat, Boston Dispensary. 1943. Grune and Stratton, New York. xii-421 pages. Illustrated. Cloth. Price $5.75.

The Kenny Concept of Infantile Paralysis and Its Treatment. By JOHN F. POHL, M.D., Clinical Assistant Professor of Orthopedic Surgery, University of Minnesota; Attending Orthopedic Surgeon, Minneapolis General Hospital. In Collaboration with SISTER ELIZABETH KENNY, Honorary Director the Elizabeth Kenny Clinics of Australia; Honorary Director the Elizabeth Kenny Institute, Minneapolis. With a Foreword by FRANK R. OBER, M.D., President, The American Orthopedic Association. Bruce Publishing Company, Minneapolis and St. Paul. 1943. 366 pages. Illustrated. Cloth. Price $5.00.

Flying Men and Medicine. The Effects of Flying Upon the Human Body. By E. OSMUN BARR, M.D. Funk & Wagnalls Company. New York. 1943. xv-254 pages. Cloth. Price $2.50.

The Principles and Practice of War Surgery. With Reference to the Biological Method of the Treatment of War Wounds and Fractures. By J. TRUETA, M.D., Formerly Director of Surgery, General Hospital of Catalonia, University of Barcelona; Assistant Surgeon (E.M.S.) Wingfield-Marris Orthopaedic Hospital, Oxford; Acting Surgeon-in-Charge, Accident Service, Radcliffe Infirmary, Oxford. With Introduction by Owen H. Wangensteen, M.D., Minneapolis, Minn. St. Louis, The C. V. Mosby Company. 1943. 441 pages. Illustrated. Cloth. Price $7.50.

This book is a timely addition to our knowledge of the surgery of war casualties. Dr. Trueta had extensive experience in the treatment of air raid casualties as surgeon-in-chief at the Barcelona Hospital during the Spanish Civil War and has continued his work at one of the foremost British Orthopedic Hospitals during the present conflict. He is therefore exceptionally well-qualified to speak on war surgery.

The title of this book is somewhat misleading, as there is no consideration whatever of head, thoracic, or abdominal wounds, a group comprising a fairly large percentage of the total wounds seen in modern war. The principal portions of this monograph are concerned with the proper closed plaster treatment of compound fractures, especially of the lower limb. In this treatise, for the first time in English, Trueta has explained carefully what has become popularly known as the "Trueta technic" of the care of compound fractures caused by high velocity fragments. A careful reading of this work convinces the reviewer that much of the criticism of Trueta's work is unjustified. He goes into great detail in considering the importance of proper excision of damaged skin and muscle before the reduction of a fracture and application of the cast. The principles of traumatic surgery are so well outlined in the first portion of this book that it should be almost compulsory reading for surgeons who must treat traumatic wounds. He has discussed quite adequately the recent advances in bacteriology of traumatic wounds and stresses the importance of Drinker's work in the role of rest in reduction of lymph flow at the site of trauma. Probably not enough attention is devoted to the *local* use of the sulfonamides.

In treatment of fractures of the upper extremities it is unfortunate that no reference is made to the so-called "hanging cast" for fractures of the humerus, by which method such excellent results are being obtained in the present war. Nor is there any reference to recent use of the Roger Anderson or Stader methods of treatment of fractures of the leg, which methods are being found to be valuable by our own armed forces.

There is a rather good chapter on the historical aspects of the development of war surgery, largely from the European point of view. There is no mention of contributions of earlier American military writers such as Mitchell and DaCosta. Quite proper credit is given to the important work of Winnett Orr.

The chapters on shock and blood transfusion, although limited in space, and dealing very little with the theoretic aspects of these matters, are quite well written and contain very practical suggestions.

The chapters on the treatment of burns and skin grafting in war surgery were thought by the reviewer to be too short, as was the treatment of problems of amputation, and injuries to nerves, arteries and tendons. The entire work is written from the point of view of the army surgeon and little attention is devoted to the many problems that confront the naval surgeon.

The reviewer believes, however, that despite the shortcomings of this work and the fact that it is largely a monograph on the Trueta-Orr method of care of compound fractures in war casualties, it is nevertheless a highly valuable addition to the library

XUM

of the surgeon who must treat traumatic injuries.

E. I. E.

The Management of Fractures, Dislocations, and Sprains. By JOHN ALBERT KEY, B.S., M.D., St. Louis. Clinical Professor of Orthopedic Surgery, Washington University School of Medicine; Associate Surgeon, Barnes, Children's, and Jewish Hospitals. And H. EARLE CROMWELL, M.D., F.A.C.S., Birmingham, Ala., Orthopedic Surgeon to the Tennessee Coal, Iron and Railroad Company and the Orthopedic and Traumatic Services of the Employees' Hospital and to the American Cast Iron Pipe Company; Chairman of the Committee on Fractures and Traumatic Surgery of the American Academy of Orthopedic Surgeons; etc. Third Edition. St. Louis. The C. V. Mosby Company. 1942. 1303 pages. Illustrated. Cloth. Price $12.50.

The third edition of this popular text and reference book has maintained the standard set by previous editions. In the author's words, "the most extensive changes have been made in the sections devoted to fractures of the spine, humerus, hip and foot." Other extensive revisions have been made in the chapter on compound fractures as a result of the changes in technique that have followed the use of sulfonamide drugs in these injuries.

The book is divided into two sections. The first part is devoted to a consideration of the general principles of treatment of fractures and dislocations and their complications. It includes a discussion of the process of healing and the factors that lead to a delayed or non-union. This section is thoroughgoing but at the same time free of confusing academic controversy. It is calculated to give the clinical man a clear and concise knowledge of these principles on which he can base his plan of treatment in any individual case.

The second edition is much larger and is comprised of 1058 pages dealing with the specific injuries which may occur to any of the various parts of the skeletal system. It discusses the anatomy involved, the diagnostic points and the complications, but the greatest emphasis is placed on the specific means of treatment. The discussion is supplemented profusely by photographs and x-rays. The text must be read to be appreciated. It can be recommended heartily to any doctor who may be called upon to treat traumatic injuries and to medical students.

WILLIAM S. STRYKER, M.D.

Tables of Food Values. By ALICE V. BRADLEY, M.S., Associate Professor of Nutrition and Health Education, State College, Santa Barbara, California. Completely Revised and Enlarged. The Manual Arts Press, Peoria, Ill. 1942. 224 pages. Cloth. Price $3.50.

This is an extensive list of food values for almost any kind of food you can think of, from cocktails to nuts. There is a brief discussion of dietary components, including the vitamins and their daily requirements, and a chapter on planning diets. The first half of the book lists the nutritional values of each food in one place, i.e., the amount of proteins, fat, carbohydrates, calories, various minerals and vitamins in an average serving of each food. Another convenient arrangement is that of listing the name of the food at each end of the line to avoid confusion. The second half of the book lists the same characteristics of the more commonly used foods per 100 gram portions, to aid in exact computations of dietary values.

Of course, every book has its weak points, which when pointed out by competent reviewers, are corrected by the author in the next edition—sometimes. Hence, I list my personal objections to the following minor points. The author gives only the values for A, thiamin, riboflavin, and ascorbic acid, and not for D. Presumably this is because we should receive this in the form of cod liver oil. However, since most adults do not take this, it should be advisable to point out that such foods as eggs, tuna fish, salmon and liver, contain appreciable quantities; an added reason for incorporating them in a diet. On page 19, the author states that irradiation of milk activates its ergosterol. Should this not be dehydrocholesterol? I am not convinced that (p. 20) vitamin D "is essential . . . for curing difficult types of dermatitis, e.g., eczema, acne, and psoriasis." (Moreover, what is a "difficult type?") On page 29, why are fish liver oil and irradiated evaporated milk the only foods listed as important sources of vitamin D? What about tuna fish, and fortified and metabolized D milks?

The section on Bar Terminology is extensive, defining in grams (it should be in cc.) such technical terms as dash, hooker, snort, spot, squirt, and wallop (40 cc.). However, the manifest failings of the cocktail recipes would indicate that the author did not put her heart and soul into it, although she did include everything else—i.e., her mint juleps contain such artifacts as soda water, lemon, orange, pineapple, and a cherry—not to mention a piece of lemon in Scotch highballs!

Nevertheless, this book is a "must" for dietitians and physicians interested in diet.

R. J. M.

VIRGINIA MEDICAL MONTHLY

Official Publication of the Medical Society of Virginia

(Founded by Landon B. Edwards, M. D., April, 1874)

WYNDHAM B. BLANTON, M. D.,
Editor Emeritus

M. PIERCE RUCKER, M. D.,
Editor

AGNES V. EDWARDS
Business Manager

PUBLICATION COMMITTEE

M. PIERCE RUCKER, M. D., Richmond, *Chairman*
J. EDWIN WOOD, JR., M. D., University WYNDHAM B. BLANTON, M. D., Richmond.

All correspondence regarding editorial matter, original articles, and policy should be directed to the Editor. Questions relating to subscription rates, advertising, etc., should be addressed to the Business Manager, 1200 East Clay Street, Richmond, Virginia. The MONTHLY is not responsible for the opinions and statements of its contributors. All advertisements are accepted subject to the approval of the Council on Pharmacy and Chemistry of the American Medical Association. Annual Subscription, $2.00. Single Copies 25c.

VOL. 70 MAY, 1943 No. 5

Procurement and Assignment Service

WHEN *our* Editor asked me to prepare a "Guest Editorial" for *our* monthly journal, I was most happy to comply with his request, as I have for some weeks had the desire again to make a report of some of the problems of the Procurement and Assignment Service to the members of the medical profession in *our* state. However, I will have to admit I am somewhat at a loss to understand how Dr. Rucker could regard me as a "guest." Perhaps, he considers that I forfeited my rights to citizenship in our state when I became more or less loosely associated with the War Manpower Commission in Washington as Chairman of the Procurement and Assignment Service for Physicians in Virginia.

In this capacity, I have been called most everything during the past several years, but I am not willing to give up the honor of still being considered a Virginian.

The first obligation entrusted to the Procurement and Assignment Service was the obtaining of a sufficient number of doctors to meet the military needs of our country. The determination of the quota of doctors which each state should be required to furnish was necessarily delayed at the beginning of this war. This delay in obtaining a definite quota not only made the work of the Procurement and Assignment Service more difficult than such would otherwise have been, but also provoked some editorials in our newspapers which served to cause unjustified criticism of the Procurement and Assignment Service both in Washington and in Virginia.

This delay was unavoidable, due to many factors beyond the control of any group of men, such as, the then undetermined size of the army and navy, the ratio of doctors to the number of troops, etc. One will recall that about two years ago there was much dispute as to whether we should have an army of one or two million men. Now ten or twelve million men is the figure being debated in our Senate and Congress. With these facts in mind we should now be more lenient in our criticism of this delay.

The Procurement and Assignment Service determines the number of doctors that can be spared from civilian life and, in consultation with the military authorities, estimates

the total number of doctors available and necessary to meet the military needs of the armed forces.

It is also the function of the Directing Board of the Procurement and Assignment Service in Washington to see that no state is required or allowed to compensate for the failure of any other state or states to obtain their alloted quota. In turn, it is, and will continue to be, the duty of each State Chairman of the Procurement and Assignment Service to see that a fair quota comes from each section of the state he represents and that no one section or city imposes on any other portion of the state. Rural communities and the so-called "critical areas" have received especially careful study in Virginia. Some of our cities have not, as yet, furnished as many doctors to the military services as they probably will have to do in the future.

In Virginia it was decided not to wait until a definite and final quota could be assigned to the state, but to obtain all the doctors who could be spared from civilian life without working undue hardship on any community. Reason suggested this course, and experience proved the wisdom of same. After this decision was reached, a tour of the entire state was made, and this resulted in a sufficient number of doctors volunteering to meet the quota of doctors for Virginia up to the present time. What the future requirements will be, no one can definitely state, for no one knows what turns this global war might take.

At present, it looks as if no large number of doctors will be needed for the remainder of the year 1943. There are now eighteen states in the Union, including Virginia, which have apparently filled their quota of doctors for military services for the year 1943, and it is significant that 12 of these states are located south of the Mason and Dixon Line.

There is only one fact concerning the future of which I am certain, and that is the doctors of Virginia will continue to meet any and all calls their country might make on them. Of course, there a few—very few—doctors in our state who in the opinion of the Procurement and Assignment Service apparently have not realized their obligation and duty to their country. To this very small number, the only comment the Procurement and Assignment Service has to make is to inform them that during the past two years we have seen some doctors who did not do what they thought was their duty during the last World War, and who have carried guilty consciences for nearly a quarter of a century, and these men are and have been the most miserable human beings in existence.

It is certainly not the function of the Procurement and Assignment Service of Virginia to tell any doctor what his duty to his country is. That question he, and he alone, can settle for himself. It is the duty and obligation of the Procurement and Assignment Service to give each doctor in this state all the information we have which might be of assistance in helping him estimate his own duty "according to the dictates of his own conscience".

Never before in any democracy has so much power ever been vested in any agency of the government as has been given to the Selective Service System. The future of every man, not only doctors, over seventeen years of age and under thirty-eight years of age rests in the hands of the Selective Service System. Men from thirty-eight to forty-five are also under the authority of Selective Service, but at present this group of men is being deferred.

Selective Service calls on the Procurement and Assignment Service for assistance in determining the availability for military service or essentiality for civilian needs of the doctors within the state. The Procurement and Assignment service acts only in an advis-

XUM

ory capacity. I am very glad to be able to state that the relationship between the many local Selective Service Boards of Virginia, the Selective Service System, and the Procurement and Assignment Service has been most cordial and co-operative, due largely to the untiring and tactful efforts of Colonel Mills F. Neal, as well as to the common sense of the various members of the different local boards.

Now that the urgent needs of the military services have been met, more consideration is being given to civilian requirements, though such has always occupied a large part of our attention and our honest efforts in the past. It is now necessary to draft certain doctors to stay at home. If a doctor is under thirty-eight years of age and is considered necessary or essential in his civilian activity, the Local Selective Service Board places him in 2-A. If he is essential to the War Production Program, excluding agriculture, then he is placed in 2-B. Agriculture in this connection does not apply to the doctor who makes his living in the practice of medicine and spends the same supporting a farm. He must be regularly engaged in agricultural pursuits.

In Virginia we have so far been able to utilize the medical ability of doctors who are found to be definitely "conscientious objectors," but how long we will be able to continue to do so is another one of those unknown factors.

Every man's classification must, under the law, be reviewed every six months by his Local Selective Service Board. If a doctor has been classified as necessary for civilian needs, it is necessary to know how much work he can do, what is the condition of his health, and what are the medical needs in the community in which he practices. For these and many other reasons, it is necessary to keep an up-to-date file on every doctor in the state.

There is such a file in the office of each representative of each Congressional district in this state for every doctor in his respective district. A copy of each of these files is also kept up-to-date in the office of the Chairman. Naturally these files are changed frequently, but every effort is made to have the files in the offices of each representative the same as those in the office of the Chairman. While the Chairman leans heavily on the opinion expressed by the various representatives to him, the final responsibility for any decision is his. Therefore any criticism made of any decision should only be made of the state Chairman and never of any of the representatives.

There are certain definite directions given to each state Chairman, and he is required to make his decisions according to these rules. The state Chairman does not make these "rules," but he does review each individual case with the Local Representative of the Procurement and Assignment Service throughout the state. "He calls them as he sees them," and the spectators and players do not always agree with each other or the umpire.

Fairly recently a Mrs. Soule representing Mr. Elmer Davis, Director of Office of War Information, has made a survey of certain "critical areas" in Virginia. I regret a "bad cold" prevented Mrs. Soule contacting your Chairman except over long-distance telephone. She did, however, have conferences with Dr. Julian Rawls of Norfolk and Dr. O. T. Amory of Newport News and groups of laymen in these two cities. Her report will be awaited with much interest, for sometimes it is helpful to see how the public views our professional problems.

In the latter part of 1942, there were four laymen added to the already established Advisory Committee of the Procurement and Assignment Service of Virginia. They are Mr. Homer Ferguson, President of the Newport News Ship Building Company; Mr. W. J. Jenks, President of the Norfolk and Western Railway Company; Dr. Lloyd Newcomb, President of the University of Virginia; and Mr. O. C. Moore, Assistant Commissioner of Labor. It is a great comfort to your Chairman to know he can call

XUM

on these gentlemen for advice in matters pertaining to the different fields of endeavor they so well represent.

As all the Representatives are over 45 years of age and most of them have had previous military service, they are able and willing to be of assistance to any of the younger doctors who are mentally disturbed concerning military problems. There have been a few cases where, for some reason, some doctor preferred to discuss his situation with the state Chairman. I hope no one has found me unavailable or unsympathetic.

The relocation of doctors both within and from without this state is now one of our acute problems, but one that is well in hand.

The location of the refugee doctors presents many difficult angles, but these are being met with the assistance of the various Local Selective Service Boards, the Board of Medical Examiners of the State of Virginia, and the National Committee for Resettlement of Foreign Physicians.

The policy of these various committees is largely to place these foreign doctors in rural communities or situations where it is impossible to locate American citizens. The refugee doctors are only so located for the duration of the war or until they become American citizens.

Analysis of the medical school lists of "essential teachers" for the current academic year shows that, to July 1, 1942, 21 per cent of the physicians on medical school faculties were in the Army or Navy service, as compared with 12 per cent of all physicians in the United States. In addition, the medical schools listed as "available 25 per cent of the physicians of military age remaining on their staffs".* From this record, I believe it is safe to assume our medical students throughout this country are receiving proper education as regards their duty to their country in time of war.

There are 412 doctors from Virginia now in the military services of our country, which is about 14 per cent of all doctors in Virginia.

In closing, let me state in all sincerity and all frankness, there is no doctor in our state who has a higher opinion of the members of the medical profession in the State of Virginia than I have. I am certain this high opinion is due to the fact that I have on file in my office an immense amount of information concerning the activities and lives of 2,893 doctors who reside in our Commonwealth. For this, I am deeply grateful to those representatives who have served so faithfully and effectively, as well as to the entire medical profession who have exhibited such a fine spirit of loyalty to their country that their record is the envy of many other states of the Union.

H. H. TROUT, M.D., *Chairman,*
Procurement and Assignment Service
for Physicians in Virginia.

Our Exchanges

ONE of the pleasant duties of the editor is to look over the exchanges that come to his desk. It gives us a good idea of what is going on in the medical world. We were particularly pleased at the complimentary notices of the VIRGINIA MEDICAL MONTHLY that appeared in a number of journals on the occasion of our former editor's resignation. War news and war medicine and surgery occupy many pages, as is to be expected. A fair amount of space is given to social and economic problems, and a

***Quoted from "Medical Education and the Procurement and Assignment Service" by Dr. Harold S. Diehl, published in February 27 issue of the "The Journal of the A. M. A."**

EDITOR'S NOTE. Since Dr. Trout objects to the place of honor accorded to the *guest* editorial, his essay has been moved to the back of the MONTHLY and made the leading editorial.

surprisingly large amount is devoted to discussing the problems of medical education. It is quite evident that the medical profession is backing the war effort 100 per cent. Then, too, there is a more wide-spread interest in obstetrics than ever before.

There are some empty places on our table. Some Journals have had to suspend publication for the "duration" because the staff had gone to war. Some have become thinner and some, particularly the British, are printed on poorer paper, but we cherish them all the more for their struggle to "carry on". Recently, a new one put in its appearance, "Voks Bulletin 1942", published in Moscow by the U. S. S. R. Society for Cultural Relations with Foreign Countries. There is a short preface by J. Stalin which I quote in full: "Only professional swindlers can assert that the German fascists, who have covered Europe with gallows, who are pillaging and outraging the peaceful population, who are setting fire to and blowing up cities and villages, and destroying the cultural values of the peoples of Europe, can be bearers of European culture, and the German army is an army of medieval obscurantism, whose function it is to destroy European culture for the sake of implanting the slaveholders' culture of the German bankers and barons." The magazine supports this theme with pictures of the museum-homes of Tolstoi in Yasnaya Polyana, Tsiolkovsky in Kaluga, Tchaikovsky in Klin, and Chekhov in Istra, before and after the occupation by the Germans. The fascists also destroyed the monument to the Ukrainian poet, Taras Shevchenko, and numerous Russian cultural monuments. That the Russians had great names in literature, science, and music, is well known; that they love and cherish their memory, and that they bitterly resent the ruthless and unnecessary destruction of their shrines is quite evident from this magazine.

But we started this editorial on account of four special issues. The first of these in point of time is the Banting Memorial number of the *Canadian Medical Association Journal* (November 1942). It has been twenty-one years since Sir Frederick Banting gave insulin to the world and November is the month in which he was born. The papers in the memorial section of the issue indicate in some measure the great variety of subjects whose investigation Sir Frederick made possible, not only by his own achievements, but by the direct stimulation of his wide-ranging mind. Reminiscences by C. H. Best with reproduction of pages from their note-books, reproduction of some of the landscapes that Sir Frederick painted when on his vacations in the North Country, an article on the contribution of Sir Frederick Banting to silicosis research, as well as several articles from the Banting and Best Department of Medical Research of the University of Toronto, give some idea as to the wide interests of the man. Besides, he had developed a skill in wood-carving, was intensely interested in early Canadian history, and had a collection of rare old Canadian and Indian relics.

This year's Blue Book of the *Wisconsin Medical Journal* (January) has a section on the history of the hundred years of the Wisconsin State Medical Society, a section on medical economics, and one on the physician at war. The State Society was organized in 1841 by the authority of Act 53 of the Territorial Legislature. The activities of the Society in the next 100 years is given in attractive chronological form. It is interesting to see that the Civil War interrupted the Society's activities. The section on economics contains an up-to-date discussion of the State and Federal tax laws, as well as laws that have to do with various medical activities, such as premarital examinations and the care of the illegitimate child, all of which are adequately indexed. The third section gives advice to the doctor who is going into the Armed Service; from what to do with his practice to how to care for his life insurance. One can but admire the completeness of the 1943 Blue Book.

The Twenty-fifth Anniversary number of *Minnesota Medicine* gives a summary of

XUM

the advances for the past twenty-five years in the various fields of medicine from anesthesia to obstetrics. We were especially pleased with the tribute that Lundy pays to the late R. E. Farr. For ten years we have missed his genial red head at the medical meetings, but we still remember his teachings in regard to local anesthesia and his emphasis upon the need of extreme gentleness in handling the tissues, and his ingenious instruments that would guarantee this gentleness.

Finally, the January number of the *Medical Annals of the District of Columbia* commemorates the 125th anniversary of the Medical Society of the District of Columbia. On its cover it carries a very attractive picture of William Thornton, M.D., architect of the United States Capitol building. According to the interesting history of the Society by Arthur C. Christie, Thornton joined the Society in 1819 and was its vice-president, 1820-1823. Among other distinguished members of the Society are mentioned J. M. Toner, S. C. Busey, E. Y. Davidson, W. C. Woodward, and Gerry Morgan. A list of those who have contributed to the programs of the Society sounds like a roll of the great names in American medicine, from Philip Syng Physick and John Collins Warren to W. F. Grenfell of Labrador. In 1895, for instance, the Society was addressed by Surgeon-General George M. Sternberg, Charles Wardell Stiles, William Osler, Major Walter Reed and Abraham Jacobi. But more important are the Society's efforts in behalf of pure drinking water, a pure milk supply, the safe-guarding of viruses, antitoxins, and analogous products, the antituberculosis battle, and in the study of maternal deaths, as related in Dr. Christie's article.

Medical Circular No. 3 of the Selective Service System

THE purpose of this circular is to guide physicians and dentists in the preliminary physical examination of registrants "to the end that all selectees will be physically examined and processed locally in like manner". The object of the examination is to disqualify locally all registrants who have obvious disqualifying lesions. In some instances registrants have been forwarded to recruiting and induction stations who had only one leg, a draining urinary fistula or marked deformities of advanced Pott's disease. Circular No. 3 stresses the importance of examining the registrants *in the nude* and *in action*. It also stresses the regulations that the preliminary physical examinations *be given only by a physician*. It seems that some have erroneously contended that because the examination consisted solely of inspection, it could be given just as effectively by a lay member of the local board.

The editor reads between the lines that many of the examining physicians who have been practicing modern, streamlined medicine, have become so dependent upon x-ray and other laboratory diagnostic measures that they undervalue their powers of observation. If that be the case, the Selective Service physicial examination offers a wonderful opportunity to re-educate several of their five senses.

In the preface of the circular General Lewis B. Hershey, the Director of the Selective Service System, expresses his appreciation of the loyal and valuable professional service that the examining physicians and dentists have been and are rendering. This view is shared by all who know the work these men are doing. In a personal communication, Colonel L. G. Rowntree, Chief of the Medical division, says "Selective Service is much impressed with the devotion and the patriotism of its examining physicians and dentists. As you no doubt know these professional men in Selective Service are making the preliminary examination of registrants who are to be inducted into all branches of the military service. This represents a national service of great magnitude and importance."

Department of Clinical and Medical Education

Institute on Industrial Medicine.

During the week of March 22 a one day Institute on Industrial Medicine was held in Newport News, Norfolk, Portsmouth, Suffolk, and Petersburg. Reports indicate that, considering wartime conditions in Tidewater Virginia, the interest and attendance were very gratifying to the Committee on Industrial Health and the Department of Clinical and Medical Education which arranged the program. There were 55 doctors present at the meeting in Newport News, 20 in Portsmouth and 40 in Petersburg. The complete program was as follows:

NEWPORT NEWS, MARCH 22

Program sponsored by the Virginia Peninsula Academy of Medicine with the cooperation of the Warwick County Medical Society and the Elizabeth City County Medical Society.

Dinner Session—Dr. W. A. Colton, President Virginia Peninsula Academy of Medicine, presiding.

1. Industrial Medicine Today—Dr. Orlen J. Johnson, Field Secretary, Council on Industrial Health, American Medical Association.
2. Industrial Medicine—Dr. W. L. Weaver, Medical Director, DuPont de Nemours Co., Ampthill Plant.
3. Occupational Dermatoses with Special Reference to the War Industries—Dr. John E. Dunn, P. A. Surgeon, Dermatoses Investigations Section, United States Public Health Service.

NORFOLK, MARCH 23

Program sponsored by the Norfolk County Medical Society.

Afternoon Session—Dr. A. B. Hodges, President, presiding.

1. Industrial Medicine Today—Dr. Orlen J. Johnson.
2. Compensation—Dr. H. U. Stephenson, Medical Advisor, Industrial Commission of Virginia.
3. Trauma: Shocks & Burns—Dr. I. A. Bigger, Surgical Staff, Medical College of Virginia.
4. Industrial Medicine—Dr. W. L. Weaver.

Evening Session—Dr. A. B. Hodges, presiding.

1. Tuberculosis Program in Industry—Dr. E. C. Harper, Director Tuberculosis Control Program, Virginia State Department of Health.
2. Occupational Dermatoses with Special Reference to the War Industries—Dr. John E. Dunn.
3. Medical Services of the United States Navy in World War II—Commander B. W. Hogan (MC), United States Navy, Recently Senior Medical Officer U. S. Navy Carrier *Wasp*.

The programs in the following cities were identical except for the changes in speakers indicated.

PORTSMOUTH, MARCH 24

Sponsored by the Portsmouth Medical Association, Dr. R. L. Corbell, President, presiding at all sessions.

SUFFOLK, MARCH 25

Sponsored by the Nansemond County Medical Society, Dr. James Habel, presiding at afternon session; Dr. E. C. Joyner, President, presiding at dinner and evening sessions.

PETERSBURG, MARCH 25

Sponsored by the Fourth District and Southside Virginia Medical Society and the Petersburg Medical Faculty, hosts for the dinner session.

Dr. T. S. Jennings, First Vice-President, Fourth District and Southside Virginia Medical Society, presiding at afternoon session.

Dr. P. L. Hill, President, Petersburg Medical Faculty, presiding at dinner session.

Dr. B. H. Knight, President, Fourth District and Southside Virginia Medical Society, presiding at evening session.

Afternoon Sessions.

1. Industrial Medicine—Dr. W. L. Weaver, Medical Director, DuPont de Nemours Co., Ampthill Plant.
   (At Petersburg Only—Dr. H. S. MacLean, Chief Medical Officer, Virginia Electric and Power Co.)
2. Compensation—Dr. H. U. Stephenson, Medical Advisor, Industrial Commission of Virginia.
   (At Portsmouth only—Col. Parke P. Deans, Chairman, Industrial Commission of Virginia.)
3. Trauma: Shock & Burns—Surgical Staff, Medical College of Virginia.
   (At Portsmouth—Dr. M. J. Hoover.)
   (At Suffolk—Dr. J. M. Meredith.)
   (At Petersburg—Dr. James T. Tucker.)
4. Tuberculosis Program in Industry—Dr. E. C. Harper, Director, Tuberculosis Control Program, Virginia State Department of Health. (Except at Petersburg.)

Dinner Sessions.

1. Occupational Dermatoses with Special Reference to the War Industries—Dr. John E. Dunn, P. A. Surgeon, Dermatoses Investigations Section, United States Public Health Service.
2. Treatment of War Wounds—Commander J. M. Deaver, United States Naval Hospital, Naval Operating Base, Norfolk.

The Committee on Industrial Health and the Department of Clinical and Medical Education will be glad to arrange similar programs on Industrial Medicine for component societies in other parts of the state. It has been suggested that future programs be confined to a dinner and evening session but the wishes of local societies will be followed in each case. Societies wishing to arrange a program should communicate with the Executive Secretary.

GEORGE B. ZEHMER,
Executive Secretary.

Societies

The Medical Society of Northern Virginia

Held its regular meeting at Front Royal on April 13, under the presidency of Dr. D. M. Kipps of that place. Dr. J. E. Harris of Winchester is secretary and Dr. C. O. Dearmont of White Post, vice-president.

The scientific program consisted of the following papers:

Thyroid Conditions—Dr. P. W. Boyd, Winchester

Virus Pneumonia—Dr. W. E. Lynn, Front Royal

The Transportation of Fractures—Dr. H. I. Pifer, Winchester

The Value of Adequate Nutrition in Surgical Cases —Dr. Leslie M. Bell, Winchester

Burns—Dr. W. H. Parker (*invited guest*), Charlottesville.

Upon completion of this program, the members adjourned for luncheon.

Lynchburg Academy of Medicine.

The meeting of the Academy on March 1 was devoted to a discussion of a type of low cost prepaid surgical benefit plan, concerning which an Academy committee has been functioning for four years. The idea is to provide adequate care for workers in Lynchburg, particularly those of the lowest income group, and it is probable that some satisfactory plan may be sponsored by the Academy in the near future. In connection with this, there appears in this issue of the MONTHLY a paper presented the Academy at this meeting, by Francis I. Libby, general manager of Piedmont Hospital Service Association, an organization which has been functioning successfully in Lynchburg for several years.

Officers of the Lynchburg Academy of Medicine, whose service began January 1, are: President, Dr. S. H. Rosenthal; president-elect, Dr. P. B. Echols; vice-president, Dr. S. O. Handy; secretary-treasurer, Dr. L. R. O'Brian, Jr. All are of Lynchburg.

Danville Academy of Medicine.

The following have been elected as officers of the Academy to serve for the duration: President, Dr. J. J. Neal; vice-presidents, Drs. S. Newman and R. W. Garnett; and secretary-treasurer, Dr. P. W. Miles, all of Danville.

The Tazewell County Medical Society

Held its regular meeting on March 11th. The program was a round table discussion of the efforts and aims of the State and Local Health Units. Dr. E. C. Harper, Richmond, spoke on Public Health Means Regarding Tuberculosis Control; Dr. H. M. Kelso, Abingdon, explained the workings of the Maternal and Child Health Program; and Dr. Paul Bundy, Grundy, told of the set-up for Venereal Disease Control.

MARY E. JOHNSTON, *Secretary.*

Norfolk County Medical Society.

At the regular meeting on April 19th, Commander J. M. Deaver, U. S. Naval Operating Base, Norfolk, spoke on "Treatment of Wounds".

Patrick-Henry Medical Society.

At the regular meeting of this Society on April 9, in Martinsville, Dr. Nelson Mercer of that city was unanimously elected to membership. Dr. John A. Shackelford, also of Martinsville, gave a descriptive lecture on the surgical treatment of varicose veins.

Roanoke Academy of Medicine.

At the meeting of the Academy on April 5, the following program was presented:

The Story of Insulin by Dr. C. H. Best, co-discoverer of insulin, University of Toronto, Toronto, Canada.

Recent Advances in Navy Medicine by Rear Admiral Luther P. Sheldon, chief of the Bureau of Medicine and Surgery, Navy Department, Washington.

These speakers were guests of the Gill Memorial Hospital Spring Graduate Course.

News

Titles for Papers at State Meeting.

Requests have been sent members of the Medical Society of Virginia for titles of papers to be presented at the annual meeting in Roanoke, October 25-27. If you wish to present a paper and have not sent in your title, do it at once. Don't forget the short abstract which must accompany this. June 1st is the deadline!

Medical College of Virginia News.

A grant of $28,630 has been received from the General Education Board with which to make an experimental study of curriculum content, organization, and related matters in the field of nurse education. Severely objective techniques will be employed. The first consideration will be to make an activity analysis of what science the nurse uses in practice to determine core material, this to be enriched in the development of integrated science instruction for nurses. Many special studies are contemplated during the four and a half or five years these experimental studies will run. Special personnel for the study will be brought in from the outside, including an advisory committee selected on a national basis.

Reverend George Ossman, rector of The Monumental Church, adjoining the buildings of the hospital division, has completed a two months' course in Boston and New York for hospital chaplains. Shortly, he will take up such duties with the college hospitals, spending the morning routine in this work and available in the afternoon on special call. As far as known this is the first program of this sort to be launched in this area, although among the larger hospitals of the north it is recognized as a necessity. Mr. Ossman will also coordinate the spiritual activities of the hospital division regardless of denominations and faiths. This program has had the staunch support of the Richmond Ministerial Association and others of the community vitally interested. This arrangement is a part of a plan of closer cooperation with The Monumental Church, involving several important exchanges of services.

A symposium on nutrition was held on March 24, 25 and 26, in cooperation with the State Nutrition Committee, at which registration numbered five hundred fifty, with probably one hundred in attendance at one time or another who did not register. Eleven states were represented in the registration. Prominent speakers on the program were: Dr. Virgil P. Sydenstricker, professor of medicine, University of Georgia; Dr. W. H. Sebrell, Surgeon, United States Public Health Service; Dr. Lydia J. Roberts, chairman, Department of Home Economics, University of Chicago; Brigadier General J. Fulmer Bright, Director of Office of Price Administration of Virginia; and Miss Bertlyn Bosley, Research Student in Nutrition, Teachers College, Columbia University.

Dr. Clair R. Spealman, assistant professor of physiology, recently resigned to enter the armed services. Dr. Spealman has been replaced by Dr. E. L. Smith of the University of Chicago. Mr. Norman L. Pinschmidt of the University of Maryland has also joined the department of pharmacology as assistant.

Dr. Porter P. Vinson, professor of esophagoscopy, bronchoscopy and gastroscopy, recently spoke before the Southeastern District of Columbia Medical Society on the Treatment of Dysphagia, with particular reference to hiatal esophageal hernia.

Dr. E. I. Evans, assistant professor of surgery, attended the "war sessions" of the American College of Surgeons at Charlotte, North Carolina, giving a talk on plastic surgery.

Dr. Edward J. Van Liere, dean of the school of medicine, West Virginia University, was a recent college visitor.

American Medical Association.

As announced sometime ago, there will be no scientific assembly of the Association this year, but the House of Delegates will meet in regular session at the Palmer House in Chicago, beginning Monday, June the 7th, and function as usual. The President-elect will be installed as President in the ball room of the hotel at a meeting at 8:00 P. M. on Tuesday, the 8th.

Major Harry J. Warthen, M.C.,

Of Richmond, now stationed at Atlantic City, N. J., with the U. S. Army Air Forces, represented this

XUM

Service at the War Sessions meetings of the American College of Surgeons held at Buffalo, Boston and Brooklyn in March.

Dr. and Mrs. T. H. Worrell

Have returned to their home "Azaleadell" at Hillsville, after a visit to Mexico where they spent the winter. Dr. Worrell reports that on February the 21st they experienced the most severe earthquake Mexico has had for thirty years, and visited the new active volcano, "San Juan Parangaricutiro", when it was nine days old. This is sixteen miles from Uruapan and three hundred miles from Mexico City. The volcano was building up about 100 feet per day, and averaged explosions sixteen times a minute, boulders weighing tons going high in the air. A month later, it was estimated the base would cover a square mile and, 100 miles away, at Morelia, one could write his name on the street in ashes from the volcano.

Promoted in Army Medical Corps.

Dr. Kenneth N. Byrne of Lexington and Dr. R. C. Allison of Petersburg, both of whom entered the Service early in 1941, have recently been promoted to the rank of Major. Major Byrne is now stationed at Ft. Jackson, S. C., where he is chief of the medical service in his unit, and Maj. Allison is at Ft. Hancock, N. J.

Dr. Herman F. Oppleman of Richmond has recently been promoted to the rank of captain. He is on foreign duty.

Dr. A. A. Davis,

Formerly of Radford, has opened offices at 1726 Eye Street, N. W., Washington, where he will be engaged in general practice. About May 15th, he will have an uptown office at 6601 Thirteenth Street, N. W.

Married.

Dr. Bernard Kyle Mundy, Lynchburg, and Miss Marjorie Jane McKee, Chanute, Kansas, March 25th. Dr. Mundy is a graduate in medicine from the University of Virginia in 1939 and is now serving a residency at Johns Hopkins Hospital, Baltimore.

Dr. Charles Gravely Young, Roanoke, and Miss Loreta Lybrook, Fincastle, April 10th. Dr. Young is a graduate of the class of 1943 of the Medical College of Virginia and is serving his internship at the College Hospitals.

Dr. Armistead Page Booker, New Castle, Del., and Miss Elizabeth Ann Morris, Welch, W. Va., April 3rd. Dr. Booker received his medical degree from the University of Virginia in 1943 and is serving his internship at the University Hospital.

Lt.-Col. Seth Gayle, Jr., M. C., Richmond, and Miss Annie Laurie Thigpen, Atlanta, Ga., April 2nd. Dr. Gayle is an alumnus of the Medical College of Virginia and is at present stationed at Fort McPherson, Ga.

Dr. Russell Nelson Snead, Midlothian, and Miss Frances Elizabeth White, Schuyler, April 10th. Dr. Snead graduated from the Medical College of Virginia, class of 1943, and is serving his internship at the Norfolk Naval Hospital, Portsmouth.

Dr. Nathaniel Clayton Ewing and Miss Mary Virginia Kennedy, both of Charlottesville, April 8. Dr. Ewing is a graduate of the Medical College of Virginia, class of '40, and has been on the staff of Blue Ridge Sanatorium.

Dr. Franklin McCue Hanger, Jr., and Mrs. Harriet Echols Ewing, both of New York City but formerly of Staunton, Va., April 16.

Officers of Children's Memorial Clinic.

Dr. Manfred Call, III, has been elected President of the Children's Memorial clinic, Richmond, succeeding Dr. Charles Outland. Dr. Howard Masters has been named vice-president, and Dr. Harvie DeJ. Coghill is clinic director and secretary.

Dr. I. C. Riggin,

State Health Commissioner, was elected President of the State and Territorial Health Officers' Association at the meeting held in Washington in March. This organization is composed of health officers of all of the States and Territories of the United States, and the meetings are for the purpose of discussing current health problems and adopting public health policies on a nation-wide basis.

Dr. R. W. Miller Honored.

At a meeting of the Richmond City School Board on April the 23rd, a photographic portrait of Dr. Roshier W. Miller was unveiled by his grandson, Roshier Williams, and will hang on the wall in the board room. This honor was paid Dr. Miller by members of the School Board in recognition of his service of twenty-three years on the Board and his fifteenth anniversary as its chairman.

National Health Honor Roll.

The names of 33 cities and counties in 18 states winning awards in the 1942 National Health Honor Roll Contest have been announced by the United States Chamber of Commerce and the American Public Health Association. These awards are made to communities which have provided community health protection against the spread of tuberculosis, venereal and other communicable diseases, have maintained protective educational services for mothers and children, and safeguards against the dangers in war industries, and have protected milk and food supplies and general sanitation of water supplies and sewerage disposal.

It is interesting to note that among the counties to receive this award is Arlington County, Virginia.

Ciba Pharmaceutical Products, Inc.,

Announces that Mr. J. J. Brodbeck has been elected its President. He formerly served the company as executive vice-president and general manager.

"Chemotherapy of Malaria",

A review of the biological and statistical background of malaria and of the literature on antimalarial chemotherapeutic agents by Dr. James H. Williams, has been published by the Lederle Laboratories, Inc. Any research worker in the malarial field may obtain a copy, without charge, by sending his name, position and connections, to Lederle Laboratories, Inc., 30 Rockefeller Plaza, New York City.

The Seaboard Medical Association

Of Virginia and North Carolina will hold its 48th annual meeting at the Jefferson Hotel, Richmond, November 30 and December 1-2, 1943. Dr. C. Lydon Harrell, Norfolk, is president, and Dr. Clarence Porter Jones, Newport News, secretary-treasurer.

For Sale—

Six gallon porcelain tank; 30 milli-ampere self rectified Kelley-Koett machine complete with hand timer and overhead high tension system. Address "Tank-Machine", care this journal, 1200 East Clay Street, Richmond. (*Adv.*)

Location Wanted

By draft exempt, well educated and experienced physician. Licensed in Virginia and the District of Columbia. Would like private or industrial practice. At present employed. Address "Physician", care this journal, 1200 East Clay Street, Richmond. (*Adv.*)

New Books.

The following are recent acquisitions to the Library of the Medical College of Virginia and are available to our readers, the only cost being return postage:

Benedek & Rubenstein—The sexual cycle in women.
Boyd, W. C.—Fundamentals of immunology.
Chenoweth & Morrison—Community hygiene.
Gellhorn, E.—Autonomic regulations.
Hadfield & Garrod—Recent advances in pathology. 4th edition.
Hamilton, B. E.—The heart in pregnancy and the childbearing age.
Irving, F. C.—Safe deliverance.
Jones, H. W.—Green fields and golden apples.
Lagerlöf, H. O.—Pancreatic function and pancreatic disease.
Orias, O. & Braun-Menendez, E.—The heart sounds in normal and pathological conditions.
Ray, M. B.—Doctors of the mind—the story of psychiatry.
Salle, A. J.—Fundamental principles of bacteriology with laboratory exercises.
Samuels, S. S.—Diseases of the peripheral arteries.
Science and man. Symposium.
War medicine.
Webster, E. T.—Rabies.
Whitney, D. D.—Family treasures.

Obituaries

Dr. Benjamin Hughes Gray,

Prominent Richmond obstetrician, died at his home in this city, on April 15. He was sixty-four years of age and studied medicine at the former University College of Medicine, Richmond, from which he graduated in 1903. Following this, Dr. Gray served an internship at the Marine Hospital in New York, after which he had special training in obstetrics in several New York hospitals before returning to Richmond in 1914. He was vice-president of Stuart Circle Hospital, professor of clinical obstetrics at the Medical College of Virginia, and was active in a number of civic and professional organizations. He had been a member of the Medical Society of Virginia since locating for practice in this State. His wife and two children survive him.

XUM

Dr. John Edward Loyd,

For over thirty years practicing physician for the Natural Bridge Station community, died at a Lexington hospital on March the 5th. He was a native of Roanoke County and sixty-seven years of age. Dr. Loyd studied medicine at the University of Virginia, from which he graduated in 1901, and was connected with the staff of the Chesapeake and Ohio Hospital at Clifton Forge for ten years before locating for private practice. He had been a member of the Medical Society of Virginia for about twenty years and was also a Mason. He is survived by his wife, mother, two sons and a large family connection.

Dr. William F. Kellam,

Well known physician of the Eastern Shore, died at his home at Onley, on March 30, at the age of sixty-three. He was graduated in medicine from Johns Hopkins University in 1906. Dr. Kellam was formerly a member of the Medical Society of Virginia, a member of the State Commission of Fisheries, and a Mason. He had always taken an active part in the civic affairs of his community. His wife and a daughter survive him.

Dr. Josiah Leake,

Churchland, died at his home there on April the 17th, at the age of sixty-two. He graduated in medicine from the former University College of Medicine in Richmond in 1908 and was for sometime a resident of Ashland. His wife and a brother survive him.

Dr. Albert Hammond Hoge,

Bluefield, W. Va., died April 8th. He was born in Giles County, Va., in 1885, and graduated from the former University College of Medicine, Richmond, in 1908. Dr. Hoge was a former president of the West Virginia State Medical Association and was at one time a member of the Medical Society of Virginia. His wife and a daughter survive him.

Dr. John O'Brien, Jr.,

Hampton, died April 2nd, following a brief illness. He was sixty-six years of age and a graduate of the Medical College of Virginia in 1901. Dr. O'Brien was a veteran of World War I and, upon his return to this country, practiced in West Virginia until his retirement. He was formerly a member of the Medical Society of Virginia.

Resolutions on Dr. Peters.

The Lynchburg Academy of Medicine, Inc., hereby desires to enter in the permanent records of its proceedings the following resolutions on the passing from this life of one of its most active and honored members, Dr. Don Preston Peters. These resolutions being conceived in the spirit of deepest sincerity represent an humble expression of esteem and altogether inadequate tribute to his memory.

WHEREAS our Lord in his infinite and infallible wisdom has taken from our mist Dr. Don Preston Peters in the sixty-sixth year of his life.

BE IT RESOLVED that the members of the Lynchburg Academy of Medicine reverently mourn the passing of one of our most active and beloved members, a man who was fully aware of the dignity and immortality of the human soul and whose chief endeavor in the practice of his high calling was the elevation of human suffering, a man who in the last great war guided solely by the dictates of his own conscience volunteered and whole-heartedly served in the Medical Corps of the Armed Forces of his country throughout most of the period that the United States was in this great conflict.

BE IT RESOLVED that in the last quarter of a century he served this community faithfully and well as a Christian gentleman with great firmness of purpose as a charitable, conscientious and skillful surgeon and in these last years did so often at the expense of his own comfort and health. His ministry was to all stations in life, to rich and poor alike. Notwithstanding he still always found time to lend his influence actively in the administration of the affairs of his church and community.

BE IT RESOLVED that he was a man of principles and enviable ideals who always tenaciously fought to uphold and elevate the practical, moral and ethical standards of his chosen profession, of the hospitals of this city, of the Lynchburg Academy of Medicine, and of his community. If ever he was in error surely it may be said that the mistake was one of judgment and not of the heart; and that all who knew him well were conscious of the fact that he was immeasurably agonized by the resumption of world wide strife and that up until the time of his death his heart was torn between what he believed to be his duty to his family, friends and community and a great desire and longing to be of help in some way in relieving the suffering and carnage now being perpetrated on humanity throughout the world.

BE IT FINALLY RESOLVED that all physicians here represented extend their heart-felt sympathy to his family in their bereavement and that we ourselves of the Lynchburg Academy of Medicine have suffered a great loss and may not soon find one to fill his chair so suddenly left vacant.

Respectfully submitted,

L. R. O'BRIAN, JR., *Chairman*
R. D. CALDWELL.